FIG. 1

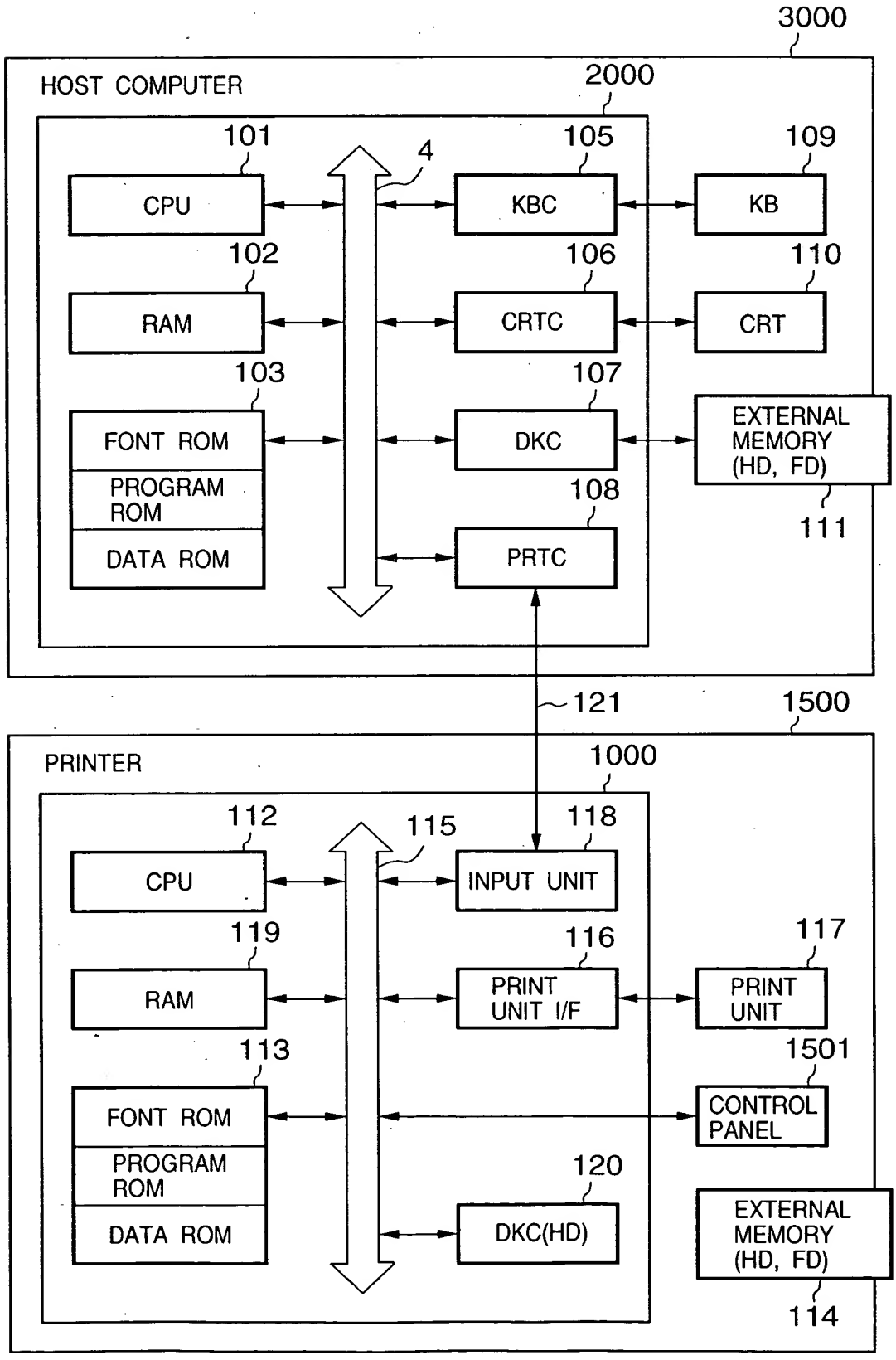

3000
HOST COMPUTER
2000
101
105
109
4
CPU
KBC
KB
102
106
110
RAM
CRTC
CRT
103
107
FONT ROM
PROGRAM ROM
DATA ROM
DKC
EXTERNAL MEMORY (HD, FD)
108
111
PRTC
121
1500
PRINTER
1000
112
115
118
CPU
INPUT UNIT
119
116
117
RAM
PRINT UNIT I/F
PRINT UNIT
113
1501
FONT ROM
PROGRAM ROM
DATA ROM
CONTROL PANEL
120
DKC(HD)
EXTERNAL MEMORY (HD, FD)
114

FIG. 2

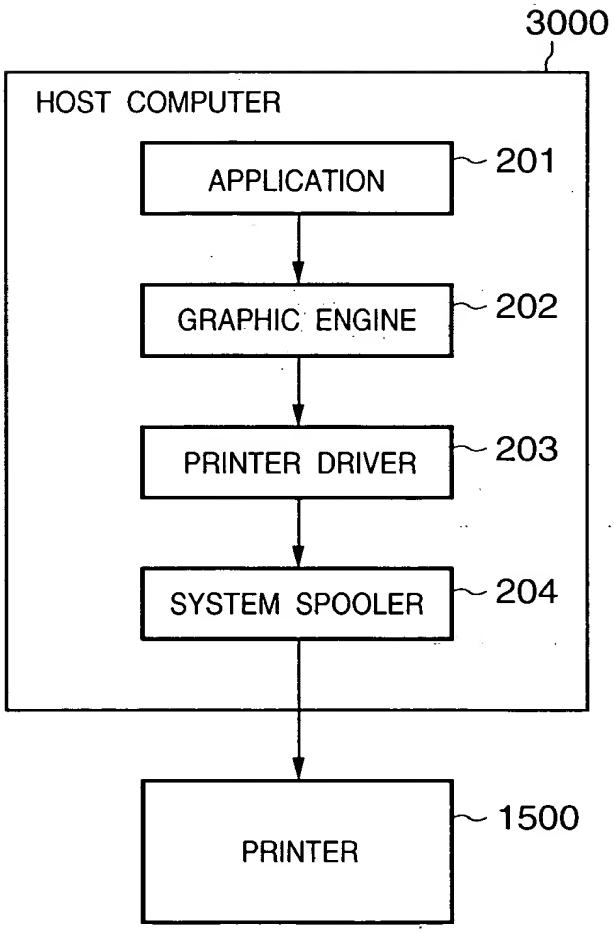

3000
HOST COMPUTER
APPLICATION
201
GRAPHIC ENGINE
202
PRINTER DRIVER
203
SYSTEM SPOOLER
204
PRINTER
1500

FIG. 3

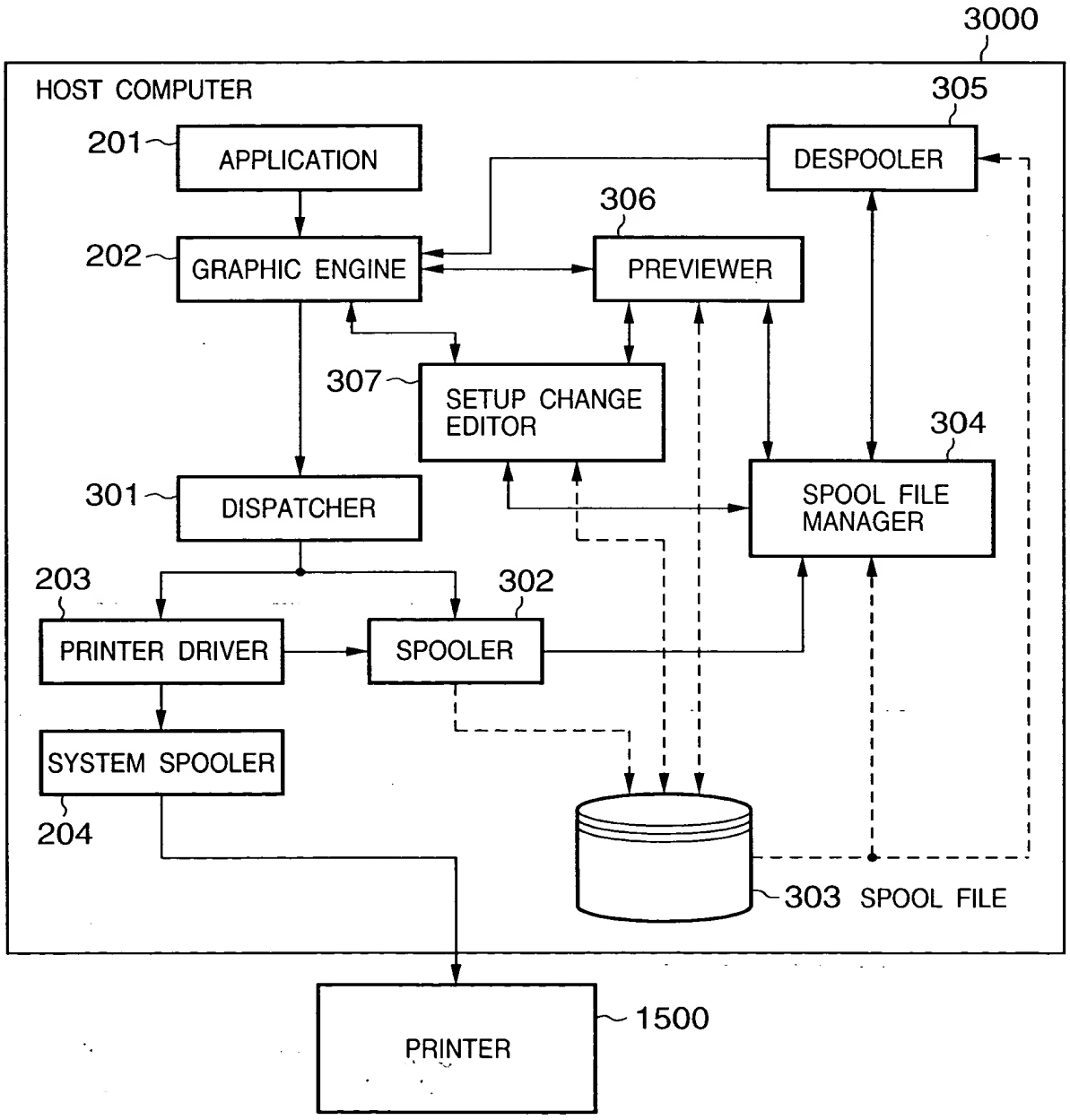

3000
HOST COMPUTER
305
201
APPLICATION
DESPOOLER
306
202
GRAPHIC ENGINE
PREVIEWER
307
SETUP CHANGE EDITOR
304
301
DISPATCHER
SPOOL FILE MANAGER
203
302
PRINTER DRIVER
SPOOLER
SYSTEM SPOOLER
204
303 SPOOL FILE
PRINTER
1500

FIG. 4

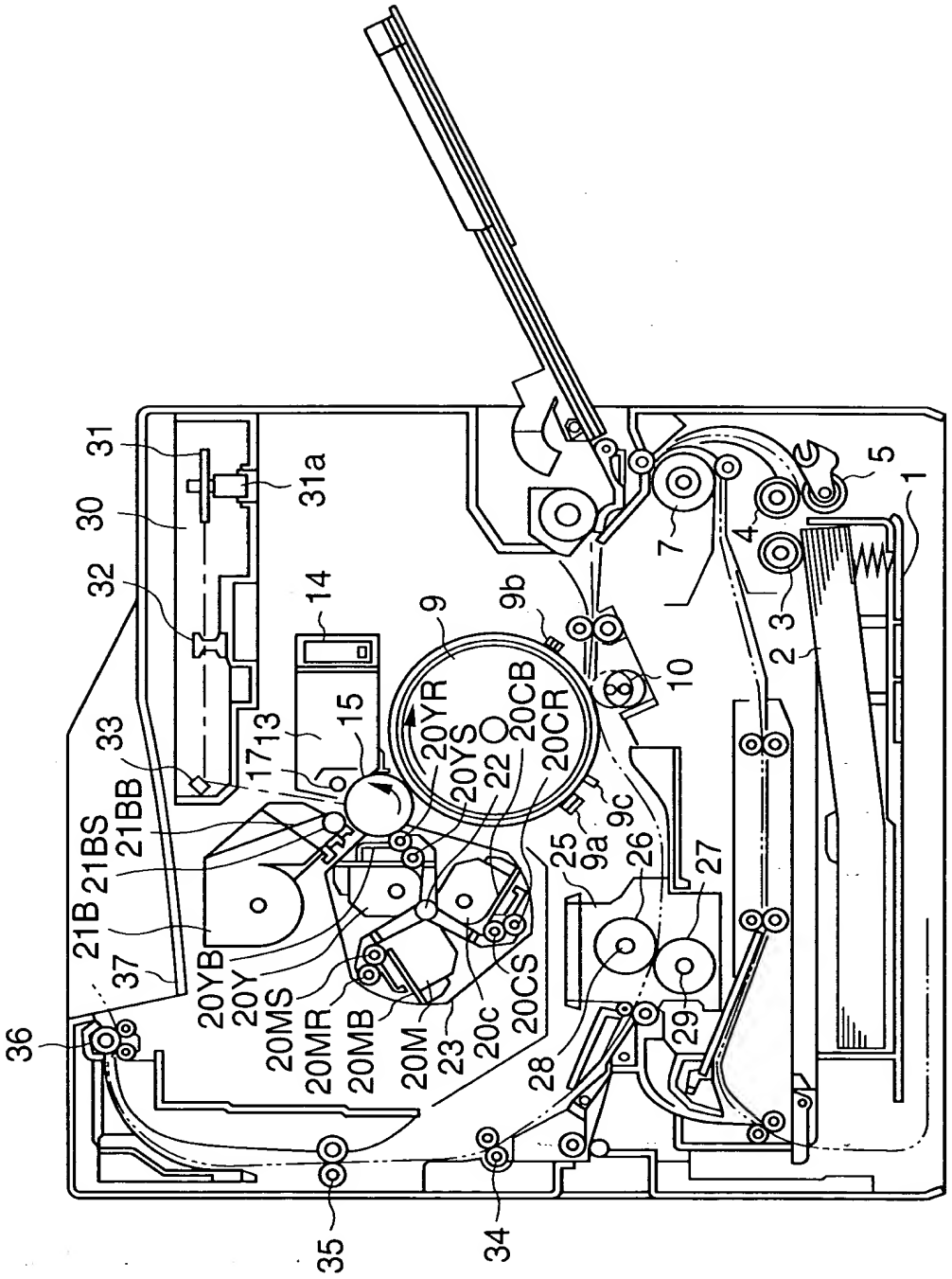

31
30
32
33
31a
14
13
17
15
9
9b
10
20YR
20YS
20CB
20CR
22
9c
9a
25
26
27
21B
21BS
21BB
37
20YB
20Y
20MS
20MR
20MB
20M
23
20c
20CS
28
29
36
35
34
7
4
3
2
5
1

FIG. 5

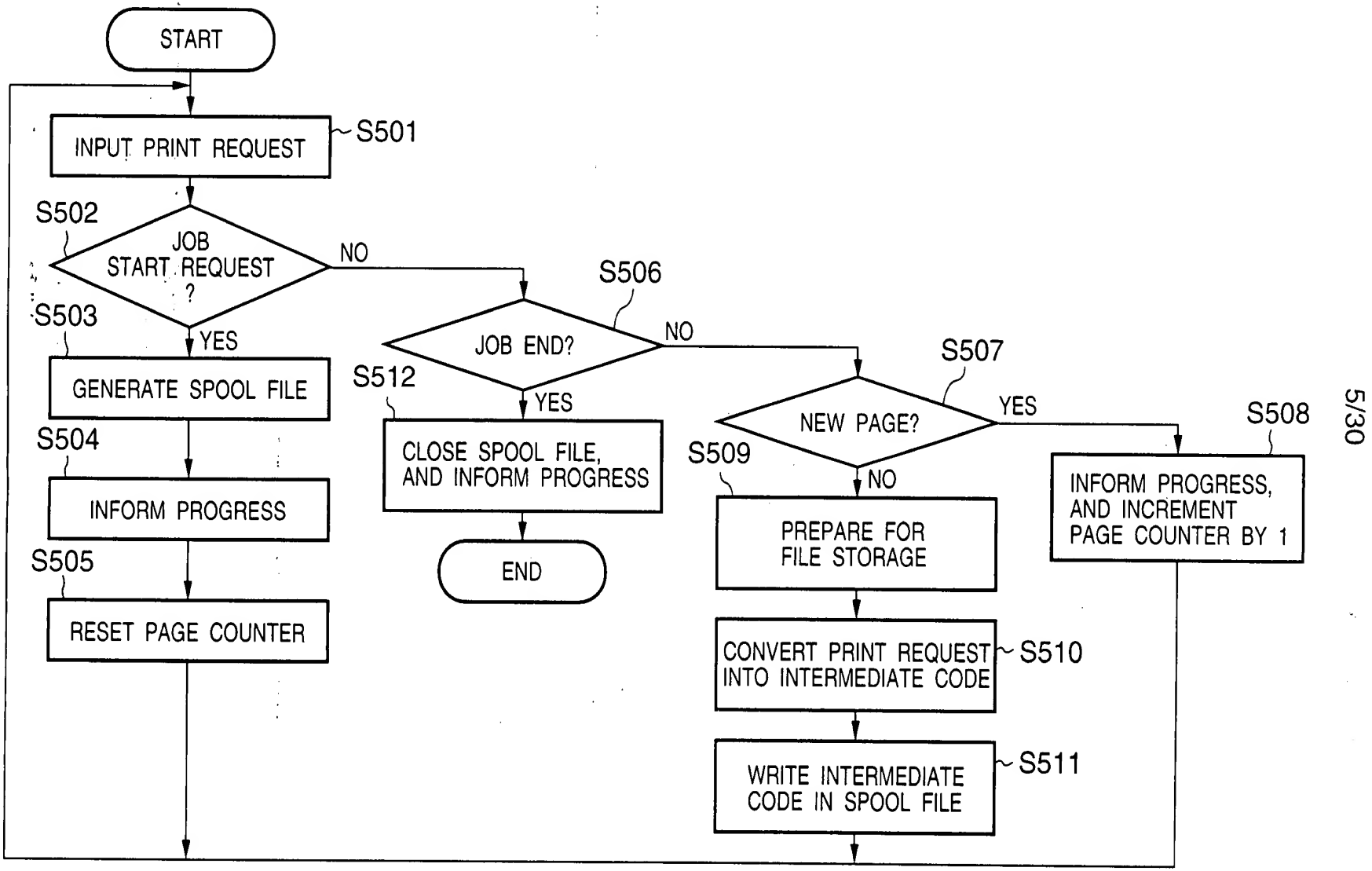

START
INPUT PRINT REQUEST
S501
S502
JOB START REQUEST ?
NO
YES
S503
GENERATE SPOOL FILE
S504
INFORM PROGRESS
S505
RESET PAGE COUNTER
S506
JOB END?
NO
YES
S512
CLOSE SPOOL FILE, AND INFORM PROGRESS
END
S507
NEW PAGE?
YES
NO
S508
INFORM PROGRESS, AND INCREMENT PAGE COUNTER BY 1
S509
PREPARE FOR FILE STORAGE
CONVERT PRINT REQUEST INTO INTERMEDIATE CODE
S510
WRITE INTERMEDIATE CODE IN SPOOL FILE
S511

FIG. 6

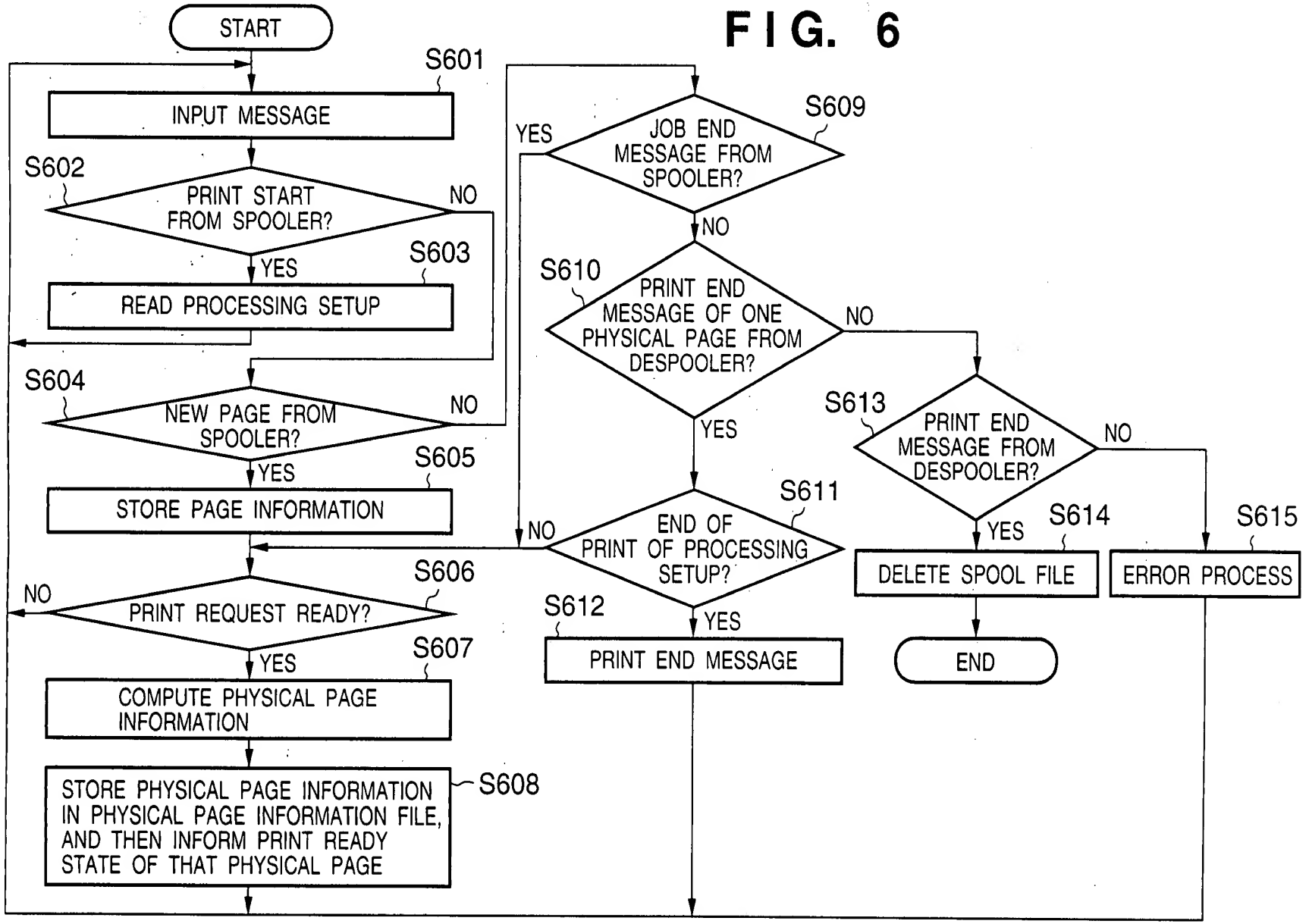

START
S601
INPUT MESSAGE
S602
PRINT START FROM SPOOLER?
NO
YES
S603
READ PROCESSING SETUP
S604
NEW PAGE FROM SPOOLER?
NO
YES
S605
STORE PAGE INFORMATION
S606
NO
PRINT REQUEST READY?
YES
S607
COMPUTE PHYSICAL PAGE INFORMATION
STORE PHYSICAL PAGE INFORMATION IN PHYSICAL PAGE INFORMATION FILE, AND THEN INFORM PRINT READY STATE OF THAT PHYSICAL PAGE
S608
YES
S609
JOB END MESSAGE FROM SPOOLER?
NO
S610
PRINT END MESSAGE OF ONE PHYSICAL PAGE FROM DESPOOLER?
NO
YES
S611
NO
END OF PRINT OF PROCESSING SETUP?
YES
S612
PRINT END MESSAGE
S613
PRINT END MESSAGE FROM DESPOOLER?
NO
YES
S614
DELETE SPOOL FILE
END
S615
ERROR PROCESS

FIG. 7

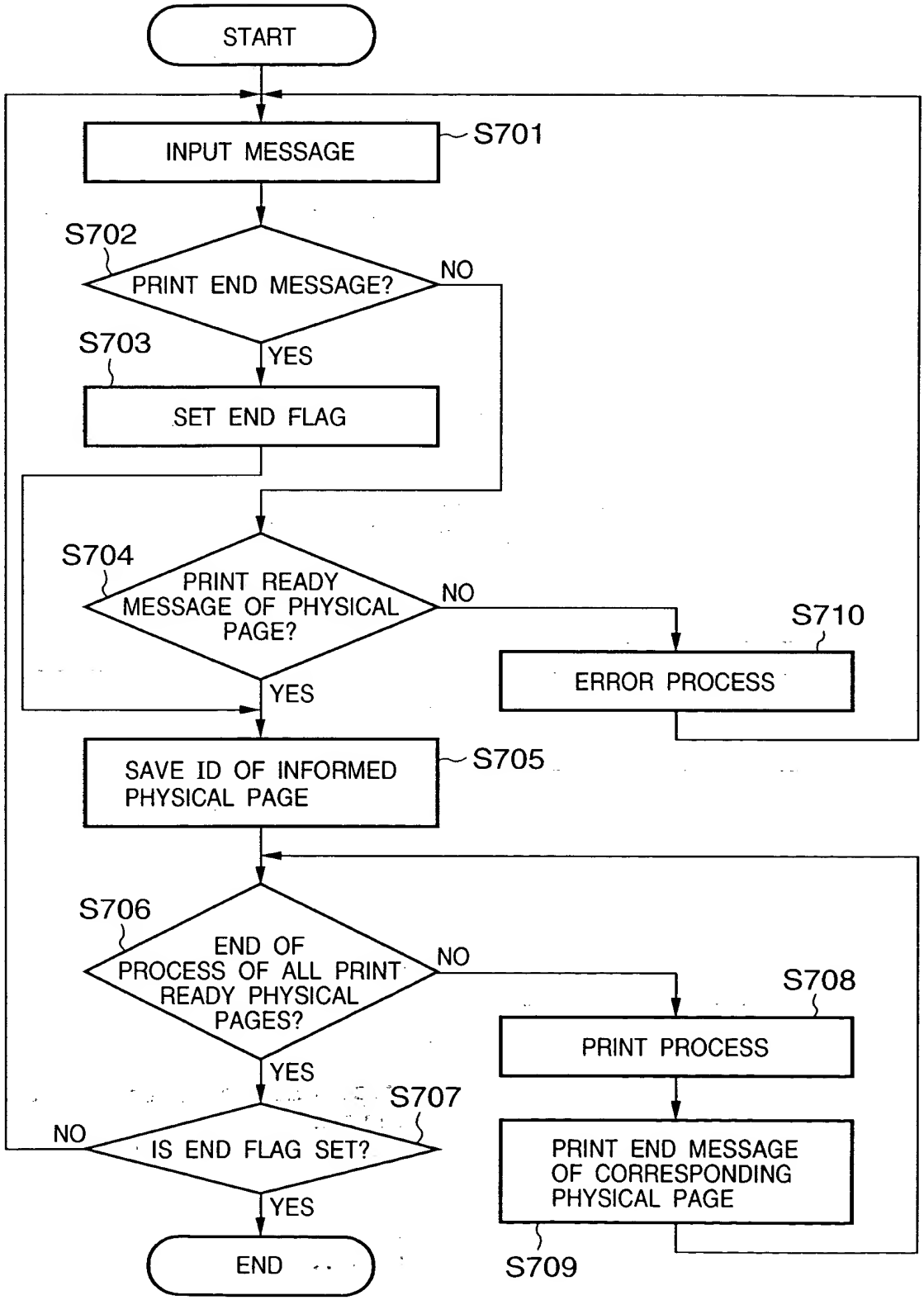

START
INPUT MESSAGE
S701
S702
PRINT END MESSAGE?
NO
YES
S703
SET END FLAG
S704
PRINT READY MESSAGE OF PHYSICAL PAGE?
NO
S710
ERROR PROCESS
YES
SAVE ID OF INFORMED PHYSICAL PAGE
S705
S706
END OF PROCESS OF ALL PRINT READY PHYSICAL PAGES?
NO
S708
PRINT PROCESS
YES
S707
NO
IS END FLAG SET?
PRINT END MESSAGE OF CORRESPONDING PHYSICAL PAGE
YES
END
S709

FIG. 8

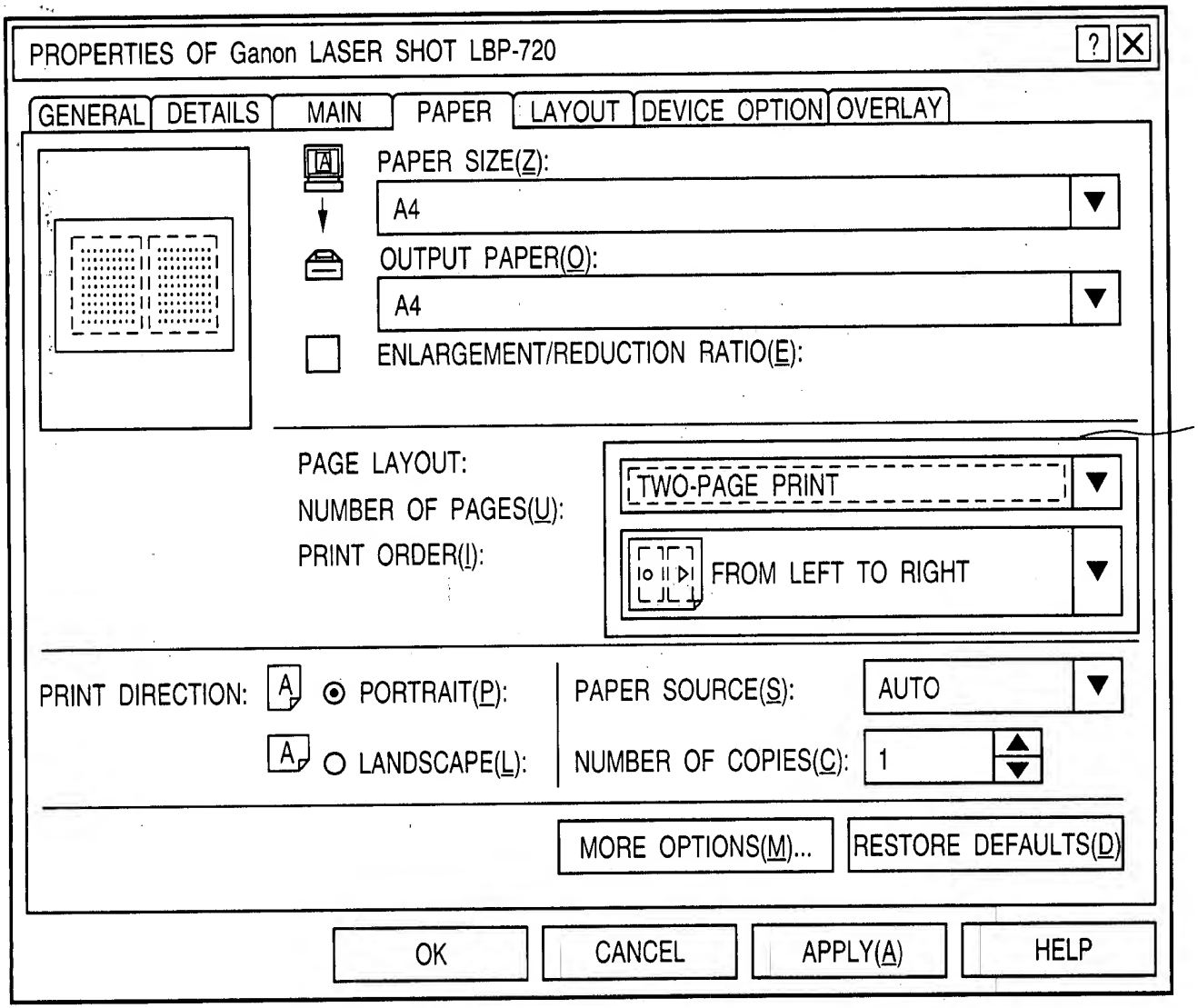

PROPERTIES OF Ganon LASER SHOT LBP-720
GENERAL
DETAILS
MAIN
PAPER
LAYOUT
DEVICE OPTION
OVERLAY
PAPER SIZE(Z):
A4
OUTPUT PAPER(O):
A4
ENLARGEMENT/REDUCTION RATIO(E):
801
PAGE LAYOUT:
NUMBER OF PAGES(U):
PRINT ORDER(I):
TWO-PAGE PRINT
FROM LEFT TO RIGHT
PRINT DIRECTION:
PORTRAIT(P):
LANDSCAPE(L):
PAPER SOURCE(S):
AUTO
NUMBER OF COPIES(C):
1
MORE OPTIONS(M)...
RESTORE DEFAULTS(D)
OK
CANCEL
APPLY(A)
HELP

FIG. 9

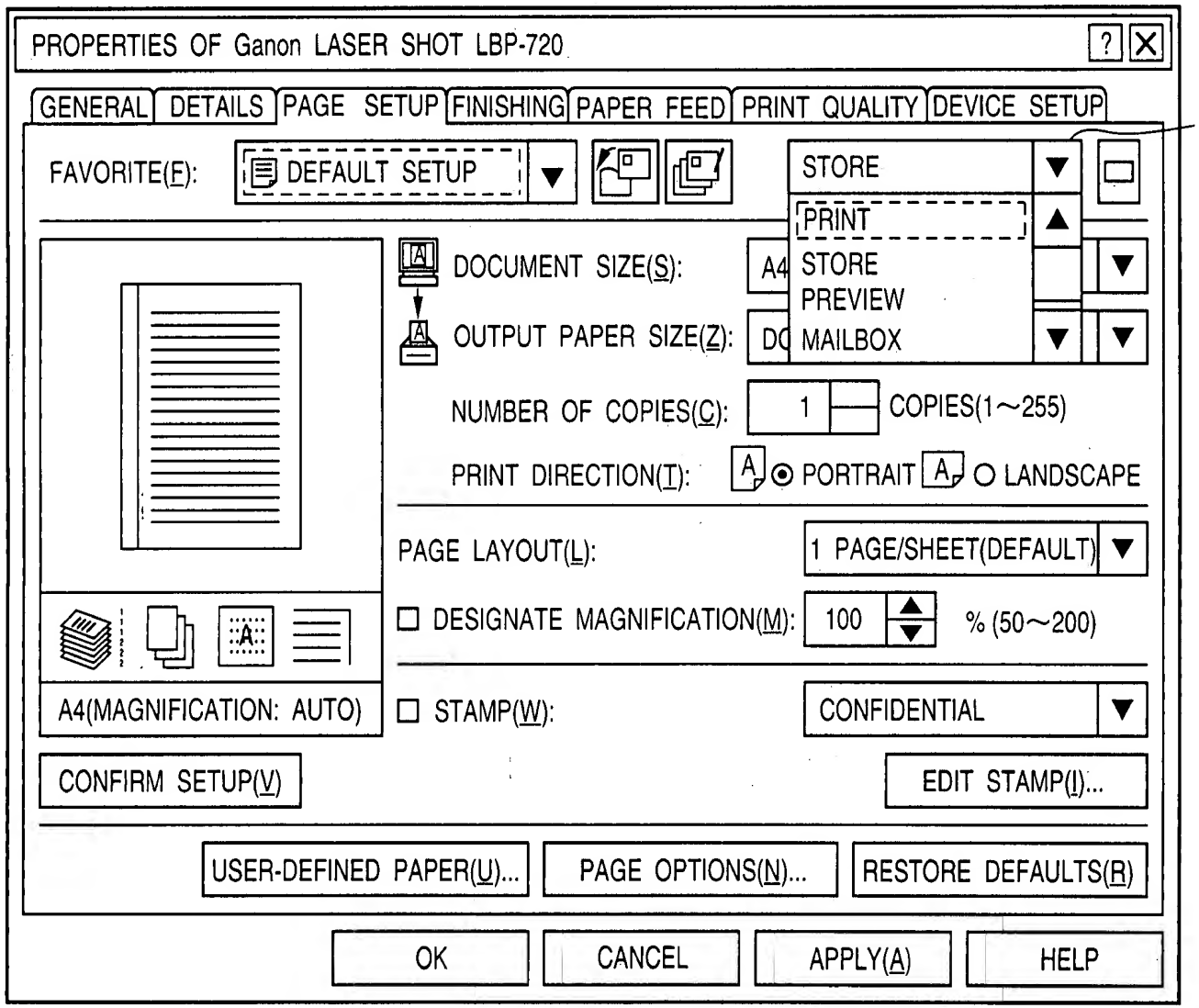

PROPERTIES OF Ganon LASER SHOT LBP-720
GENERAL
DETAILS
PAGE SETUP
FINISHING
PAPER FEED
PRINT QUALITY
DEVICE SETUP
901
FAVORITE(F):
DEFAULT SETUP
STORE
PRINT
STORE
PREVIEW
MAILBOX
DOCUMENT SIZE(S):
OUTPUT PAPER SIZE(Z):
NUMBER OF COPIES(C):
1
COPIES(1~255)
PRINT DIRECTION(T):
PORTRAIT
LANDSCAPE
PAGE LAYOUT(L):
1 PAGE/SHEET(DEFAULT)
DESIGNATE MAGNIFICATION(M):
100
% (50~200)
A4(MAGNIFICATION: AUTO)
STAMP(W):
CONFIDENTIAL
CONFIRM SETUP(V)
EDIT STAMP(I)...
USER-DEFINED PAPER(U)...
PAGE OPTIONS(N)...
RESTORE DEFAULTS(R)
OK
CANCEL
APPLY(A)
HELP

FIG. 10

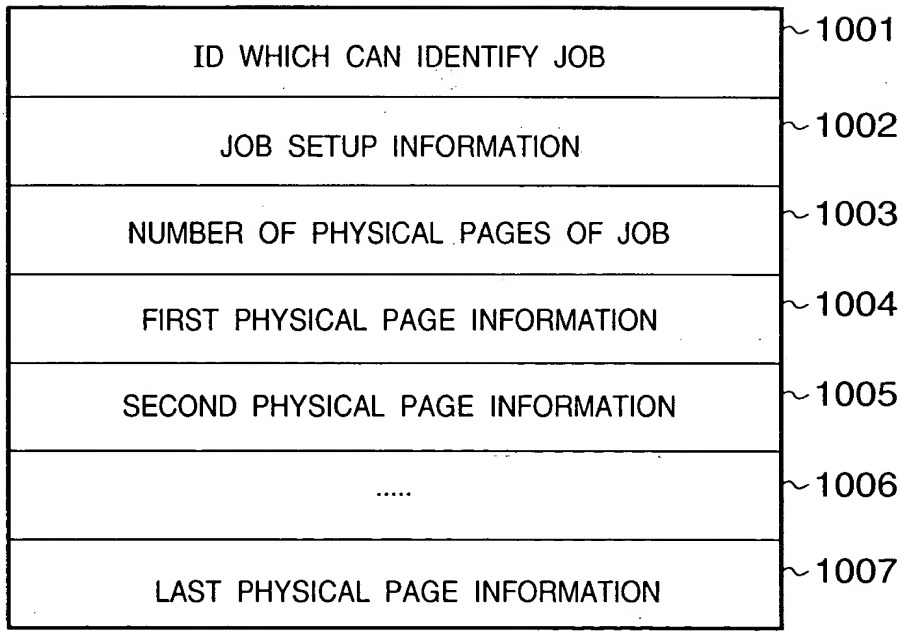

ID WHICH CAN IDENTIFY JOB
1001
JOB SETUP INFORMATION
1002
NUMBER OF PHYSICAL PAGES OF JOB
1003
FIRST PHYSICAL PAGE INFORMATION
1004
SECOND PHYSICAL PAGE INFORMATION
1005
.....
1006
LAST PHYSICAL PAGE INFORMATION
1007

FIG. 11

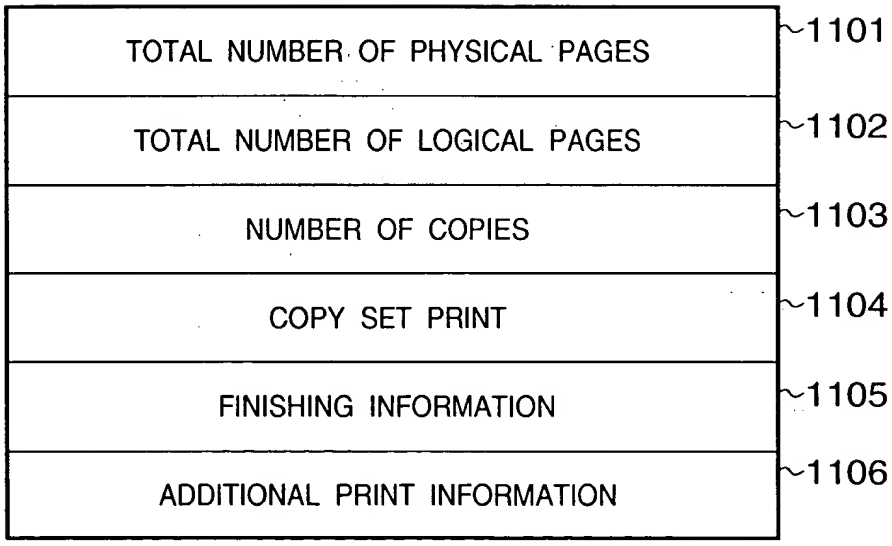

TOTAL NUMBER OF PHYSICAL PAGES
1101
TOTAL NUMBER OF LOGICAL PAGES
1102
NUMBER OF COPIES
1103
COPY SET PRINT
1104
FINISHING INFORMATION
1105
ADDITIONAL PRINT INFORMATION
1106

FIG. 12

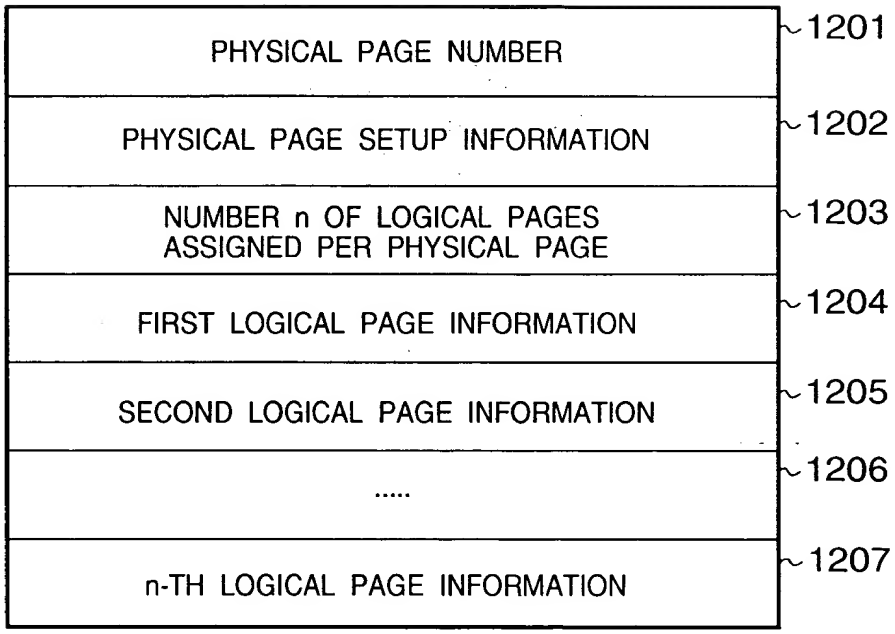

PHYSICAL PAGE NUMBER
1201
PHYSICAL PAGE SETUP INFORMATION
1202
NUMBER n OF LOGICAL PAGES ASSIGNED PER PHYSICAL PAGE
1203
FIRST LOGICAL PAGE INFORMATION
1204
SECOND LOGICAL PAGE INFORMATION
1205
.....
1206
n-TH LOGICAL PAGE INFORMATION
1207

FIG. 13

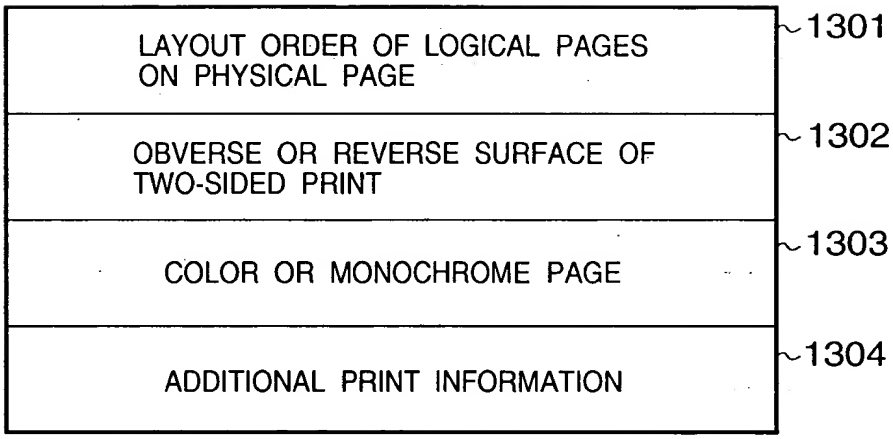

LAYOUT ORDER OF LOGICAL PAGES ON PHYSICAL PAGE
1301
OBVERSE OR REVERSE SURFACE OF TWO-SIDED PRINT
1302
COLOR OR MONOCHROME PAGE
1303
ADDITIONAL PRINT INFORMATION
1304

FIG. 14

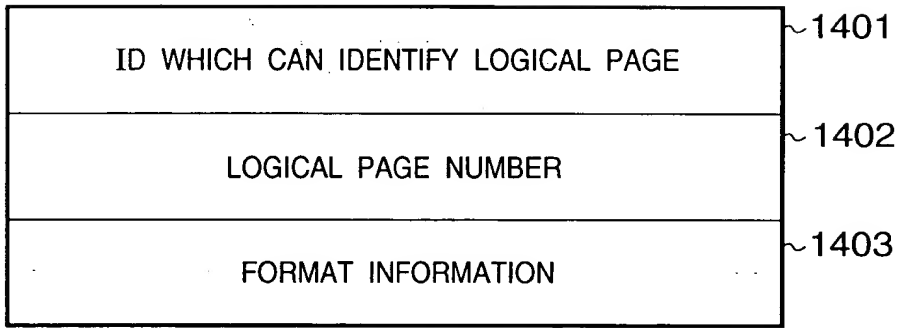

ID WHICH CAN IDENTIFY LOGICAL PAGE
1401
LOGICAL PAGE NUMBER
1402
FORMAT INFORMATION
1403

FIG. 15

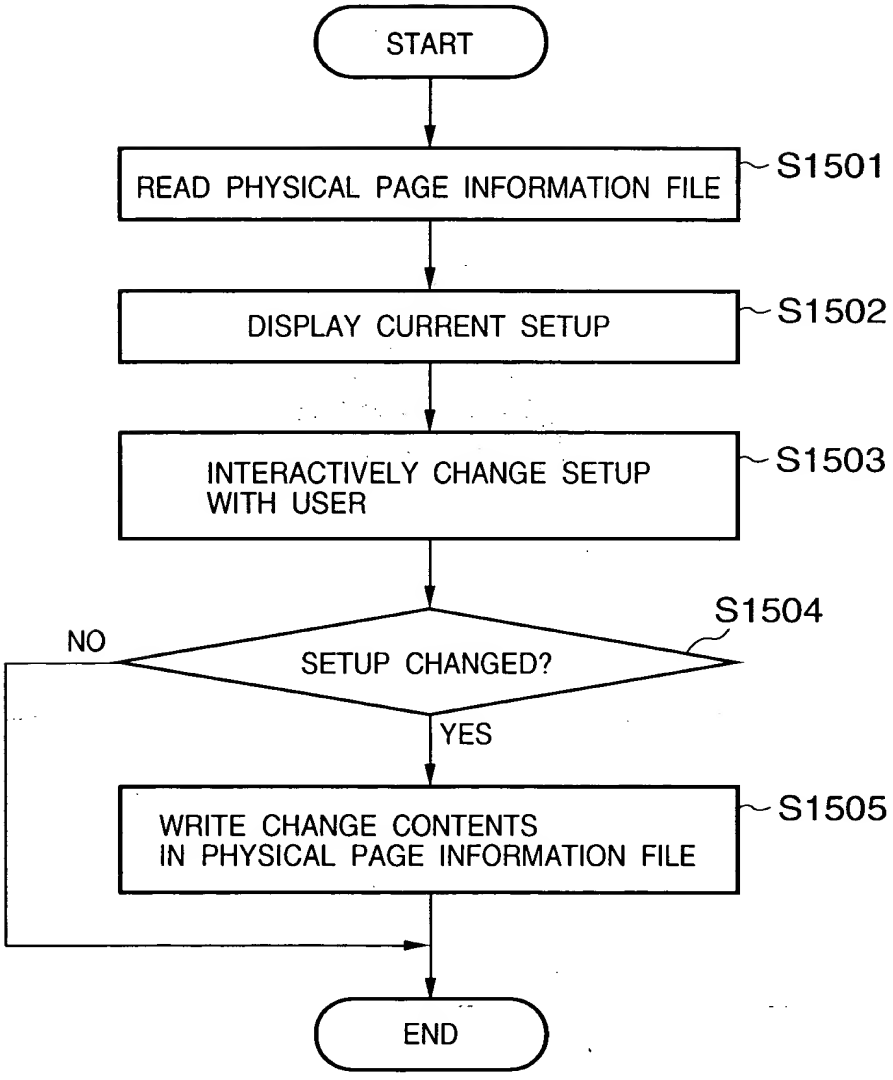

START
READ PHYSICAL PAGE INFORMATION FILE
S1501
DISPLAY CURRENT SETUP
S1502
INTERACTIVELY CHANGE SETUP WITH USER
S1503
S1504
NO
SETUP CHANGED?
YES
WRITE CHANGE CONTENTS IN PHYSICAL PAGE INFORMATION FILE
S1505
END

FIG. 16

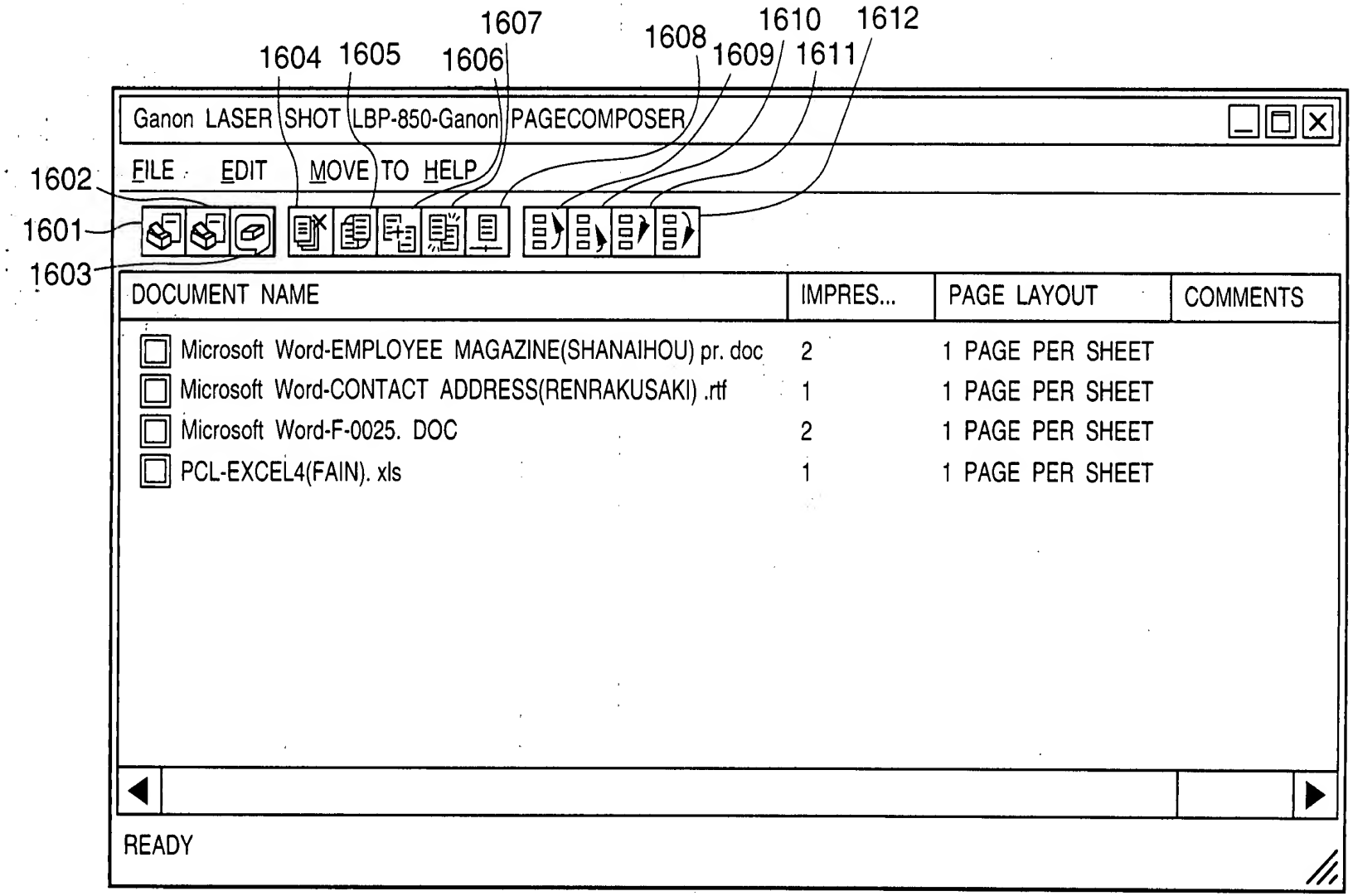

1607
1608
1610
1612
1604
1605
1606
1609
1611
Ganon LASER SHOT LBP-850-Ganon PAGECOMPOSER
1602
FILE EDIT MOVE TO HELP
1601
1603
DOCUMENT NAME
IMPRES...
PAGE LAYOUT
COMMENTS
Microsoft Word-EMPLOYEE MAGAZINE(SHANAIHOU) pr. doc 2 1 PAGE PER SHEET
Microsoft Word-CONTACT ADDRESS(RENRAKUSAKI) .rtf 1 1 PAGE PER SHEET
Microsoft Word-F-0025. DOC 2 1 PAGE PER SHEET
PCL-EXCEL4(FAIN). xls 1 1 PAGE PER SHEET
READY

FIG. 17

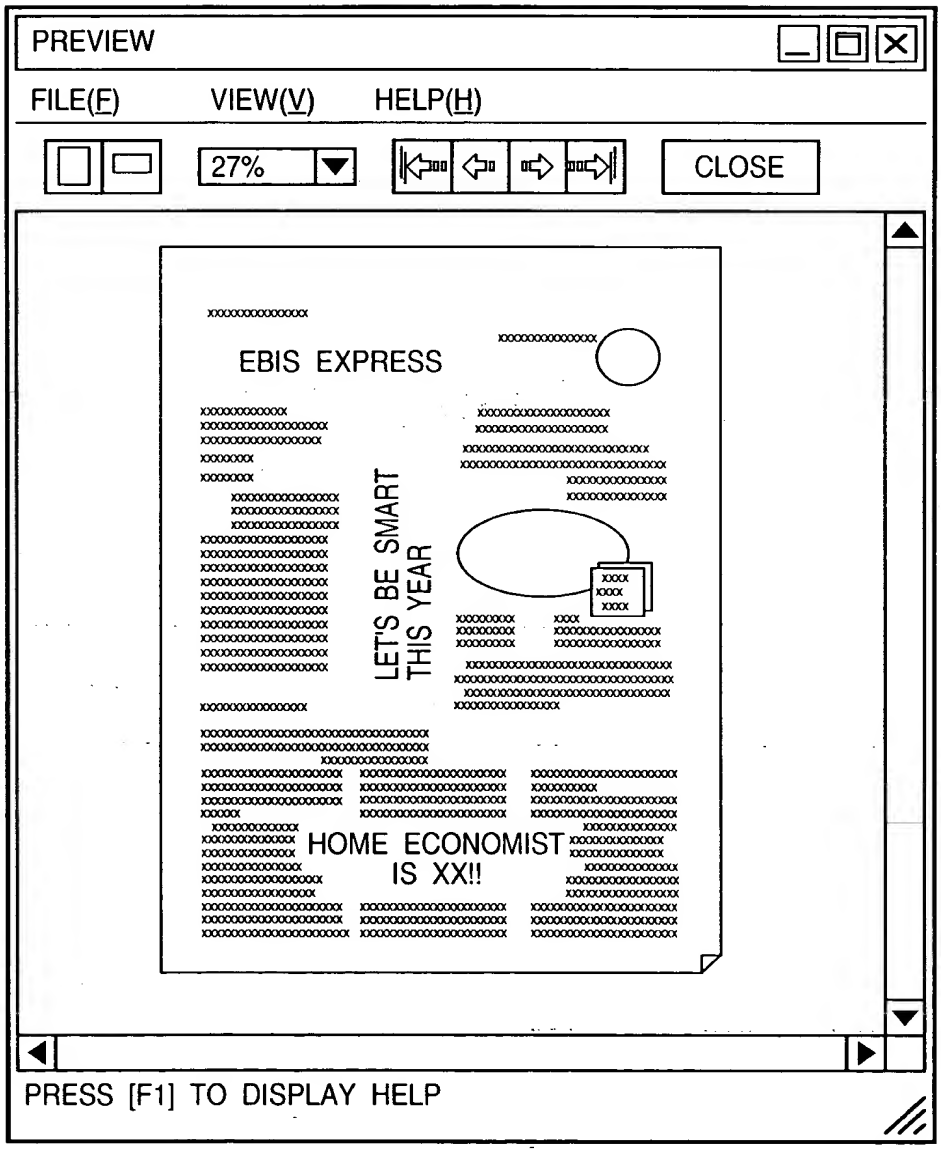

PREVIEW
FILE(F)
VIEW(V)
HELP(H)
27%
CLOSE
EBIS EXPRESS
LET'S BE SMART
THIS YEAR
HOME ECONOMIST
IS XX!!
PRESS [F1] TO DISPLAY HELP

FIG. 18

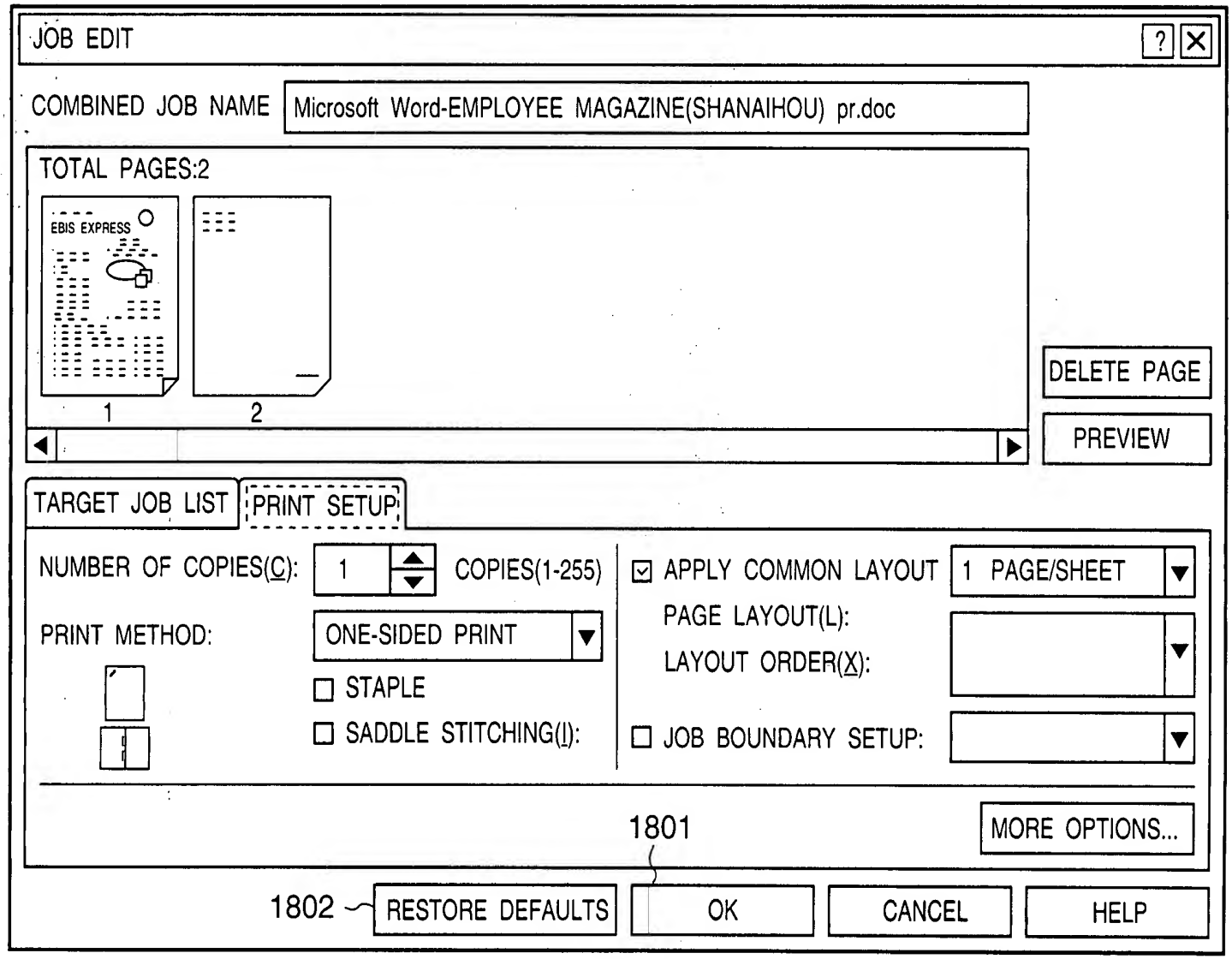

JOB EDIT
COMBINED JOB NAME
Microsoft Word-EMPLOYEE MAGAZINE(SHANAIHOU) pr.doc
TOTAL PAGES:2
EBIS EXPRESS
1
2
DELETE PAGE
PREVIEW
TARGET JOB LIST
PRINT SETUP
NUMBER OF COPIES(C):
1
COPIES(1-255)
PRINT METHOD:
ONE-SIDED PRINT
STAPLE
SADDLE STITCHING(I):
APPLY COMMON LAYOUT
1 PAGE/SHEET
PAGE LAYOUT(L):
LAYOUT ORDER(X):
JOB BOUNDARY SETUP:
MORE OPTIONS...
1801
1802
RESTORE DEFAULTS
OK
CANCEL
HELP

FIG. 19

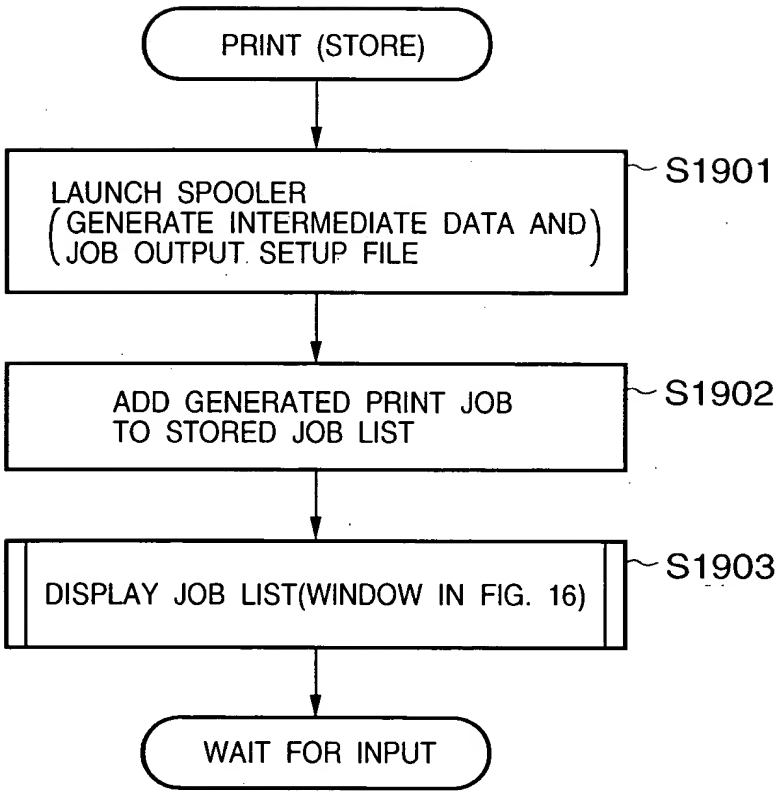

PRINT (STORE)
LAUNCH SPOOLER
(GENERATE INTERMEDIATE DATA AND
JOB OUTPUT SETUP FILE)
S1901
ADD GENERATED PRINT JOB
TO STORED JOB LIST
S1902
DISPLAY JOB LIST(WINDOW IN FIG. 16)
S1903
WAIT FOR INPUT

FIG. 20

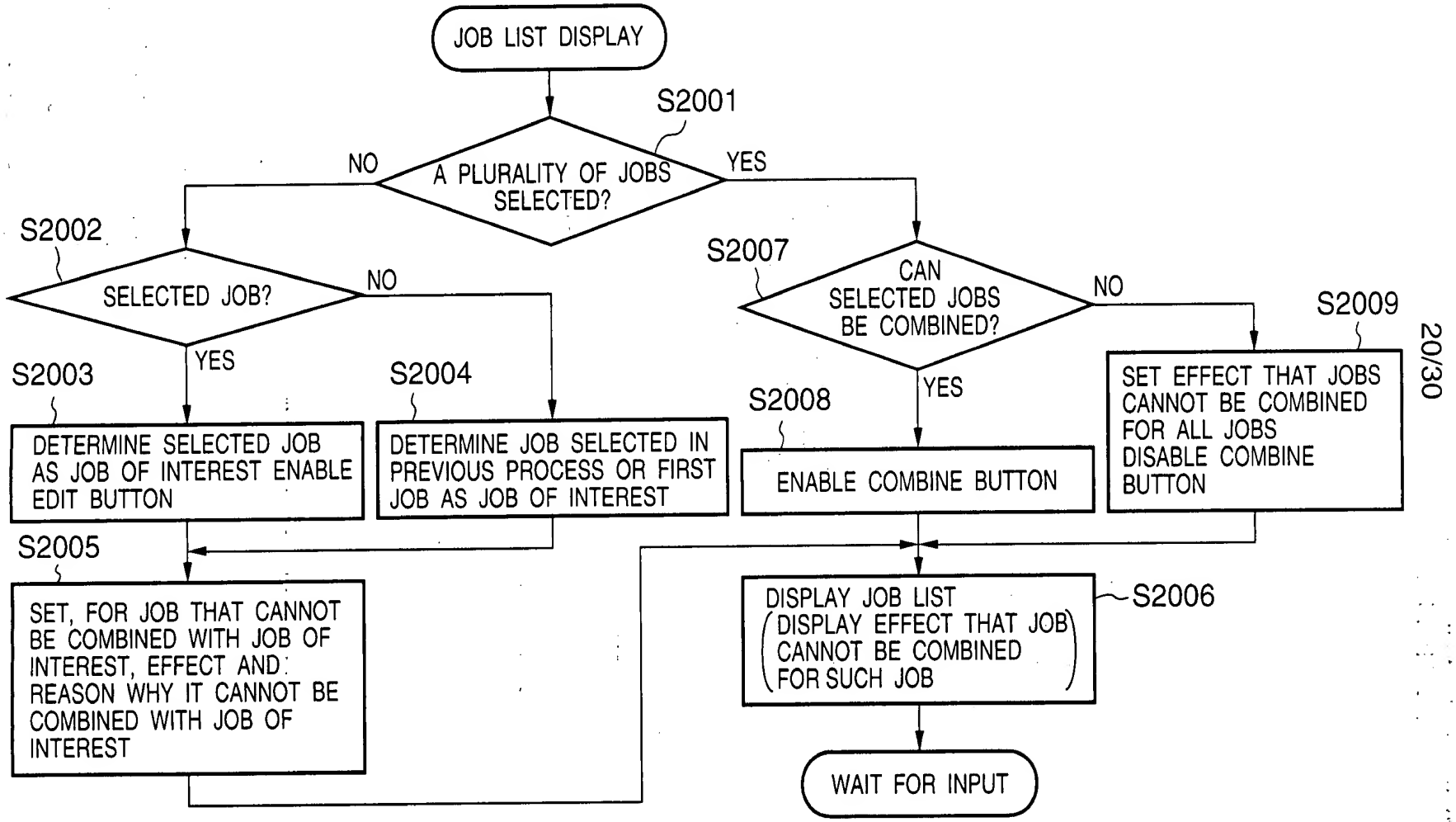

JOB LIST DISPLAY
S2001
A PLURALITY OF JOBS SELECTED?
NO
YES
S2002
SELECTED JOB?
NO
YES
S2003
DETERMINE SELECTED JOB AS JOB OF INTEREST ENABLE EDIT BUTTON
S2004
DETERMINE JOB SELECTED IN PREVIOUS PROCESS OR FIRST JOB AS JOB OF INTEREST
S2005
SET, FOR JOB THAT CANNOT BE COMBINED WITH JOB OF INTEREST, EFFECT AND REASON WHY IT CANNOT BE COMBINED WITH JOB OF INTEREST
S2007
CAN SELECTED JOBS BE COMBINED?
NO
YES
S2008
ENABLE COMBINE BUTTON
S2009
SET EFFECT THAT JOBS CANNOT BE COMBINED FOR ALL JOBS DISABLE COMBINE BUTTON
S2006
DISPLAY JOB LIST (DISPLAY EFFECT THAT JOB CANNOT BE COMBINED FOR SUCH JOB)
WAIT FOR INPUT

FIG. 21

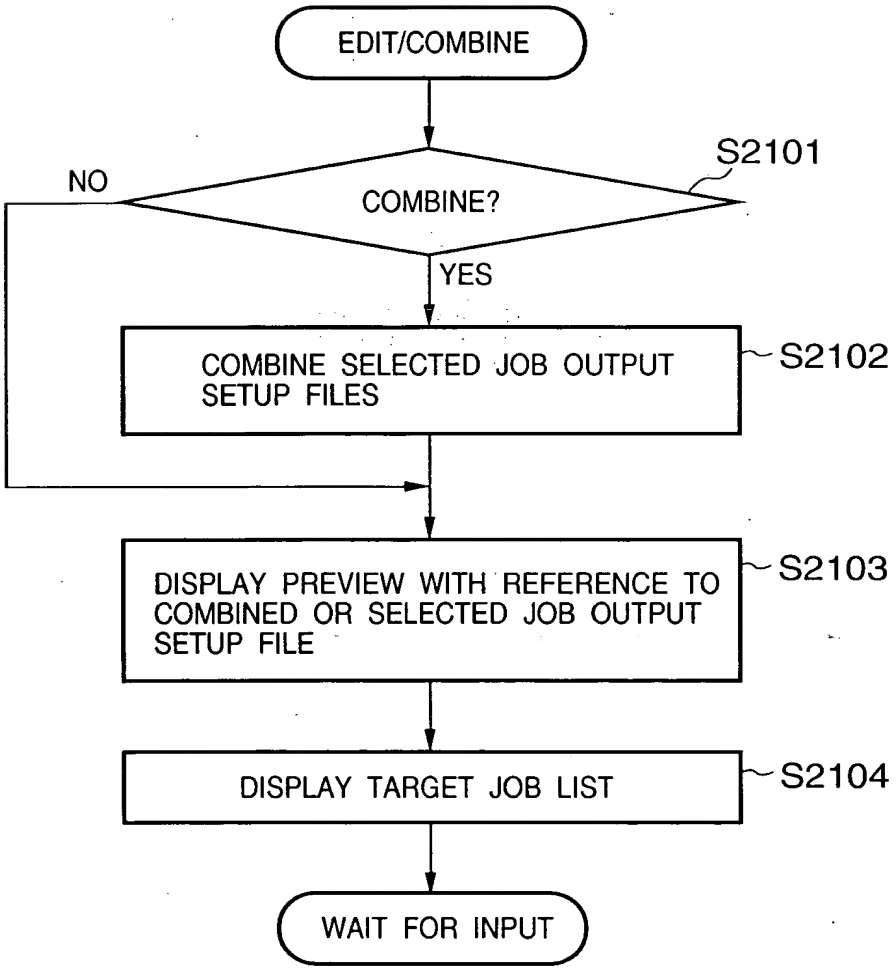

EDIT/COMBINE
S2101
COMBINE?
NO
YES
COMBINE SELECTED JOB OUTPUT SETUP FILES
S2102
DISPLAY PREVIEW WITH REFERENCE TO COMBINED OR SELECTED JOB OUTPUT SETUP FILE
S2103
DISPLAY TARGET JOB LIST
S2104
WAIT FOR INPUT

FIG. 22

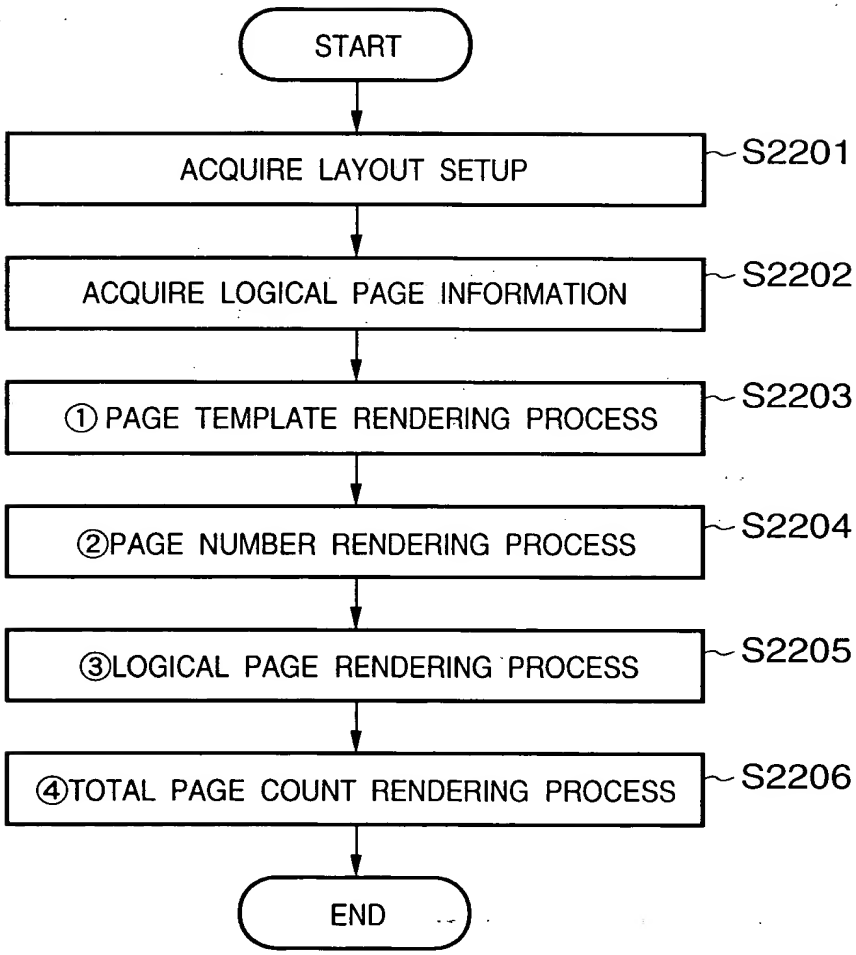

START
ACQUIRE LAYOUT SETUP
S2201
ACQUIRE LOGICAL PAGE INFORMATION
S2202
① PAGE TEMPLATE RENDERING PROCESS
S2203
②PAGE NUMBER RENDERING PROCESS
S2204
③LOGICAL PAGE RENDERING PROCESS
S2205
④TOTAL PAGE COUNT RENDERING PROCESS
S2206
END

FIG. 23

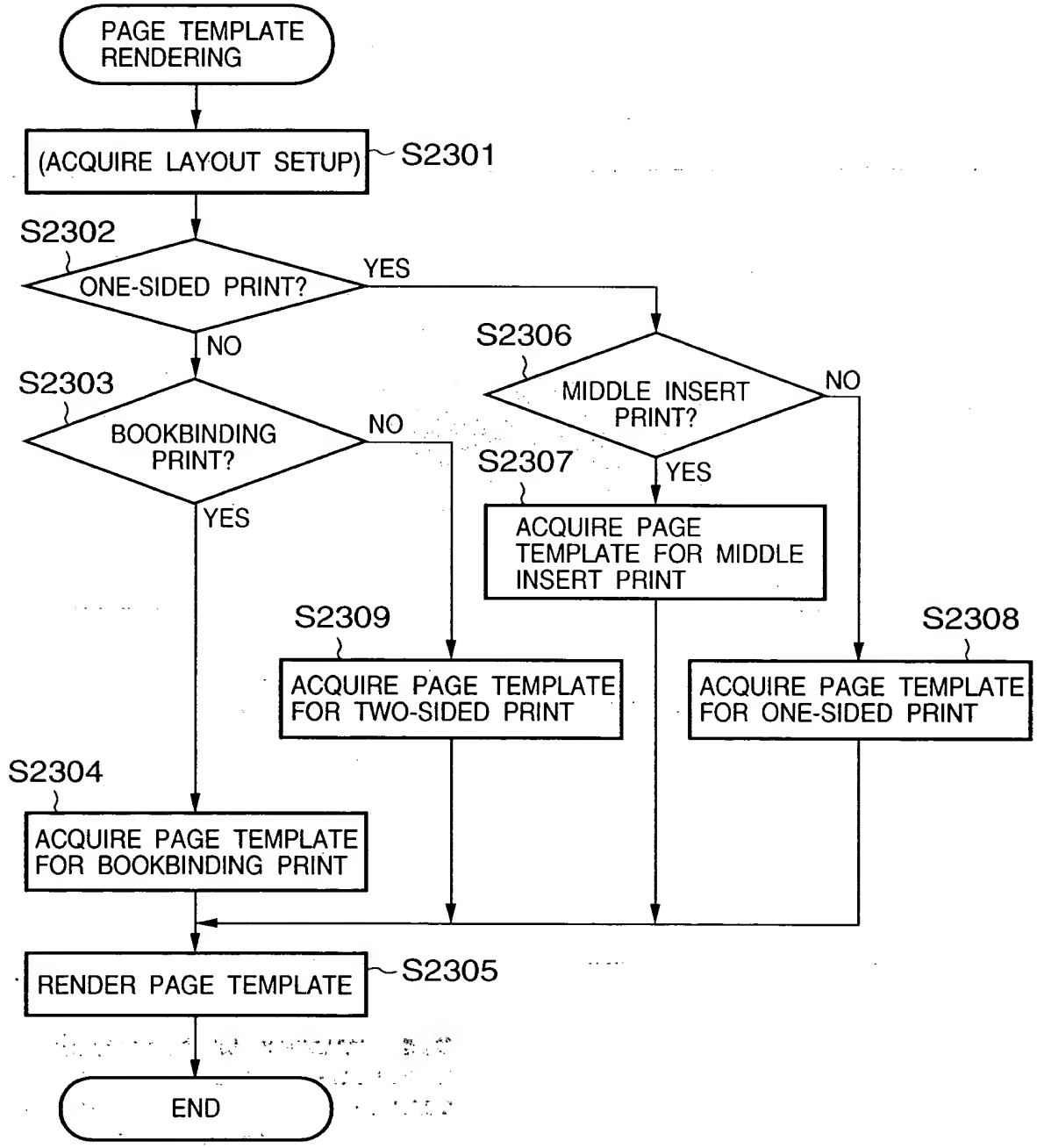

PAGE TEMPLATE RENDERING
(ACQUIRE LAYOUT SETUP)
S2301
S2302
ONE-SIDED PRINT?
YES
NO
S2303
BOOKBINDING PRINT?
NO
YES
S2306
MIDDLE INSERT PRINT?
NO
YES
S2307
ACQUIRE PAGE TEMPLATE FOR MIDDLE INSERT PRINT
S2309
ACQUIRE PAGE TEMPLATE FOR TWO-SIDED PRINT
S2308
ACQUIRE PAGE TEMPLATE FOR ONE-SIDED PRINT
S2304
ACQUIRE PAGE TEMPLATE FOR BOOKBINDING PRINT
RENDER PAGE TEMPLATE
S2305
END

FIG. 24

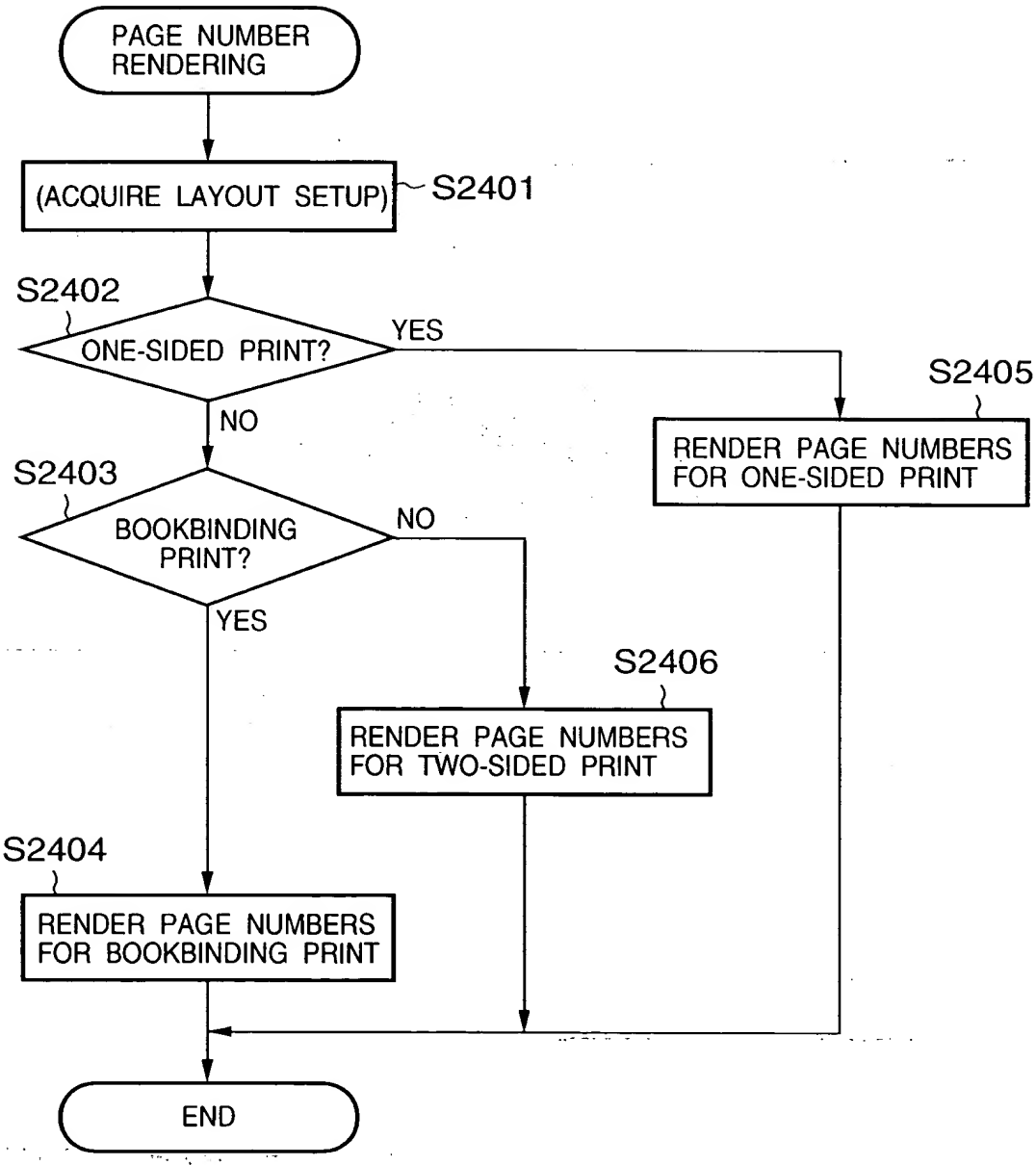

PAGE NUMBER RENDERING
(ACQUIRE LAYOUT SETUP)
S2401
S2402
ONE-SIDED PRINT?
YES
NO
S2405
RENDER PAGE NUMBERS FOR ONE-SIDED PRINT
S2403
BOOKBINDING PRINT?
NO
YES
S2406
RENDER PAGE NUMBERS FOR TWO-SIDED PRINT
S2404
RENDER PAGE NUMBERS FOR BOOKBINDING PRINT
END

FIG. 25

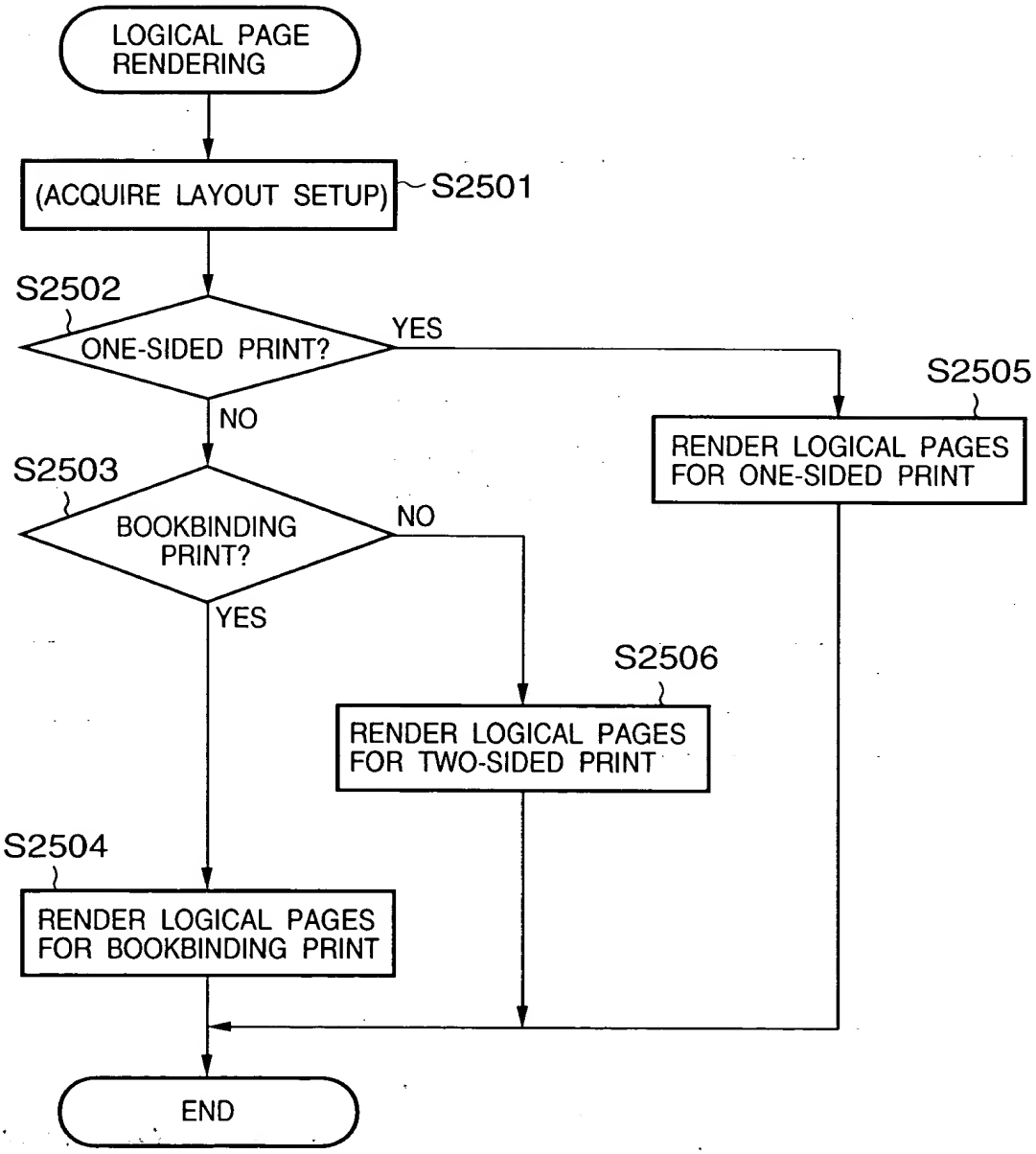

LOGICAL PAGE RENDERING
(ACQUIRE LAYOUT SETUP)
S2501
S2502
ONE-SIDED PRINT?
YES
NO
S2505
RENDER LOGICAL PAGES FOR ONE-SIDED PRINT
S2503
BOOKBINDING PRINT?
NO
YES
S2506
RENDER LOGICAL PAGES FOR TWO-SIDED PRINT
S2504
RENDER LOGICAL PAGES FOR BOOKBINDING PRINT
END

FIG. 26

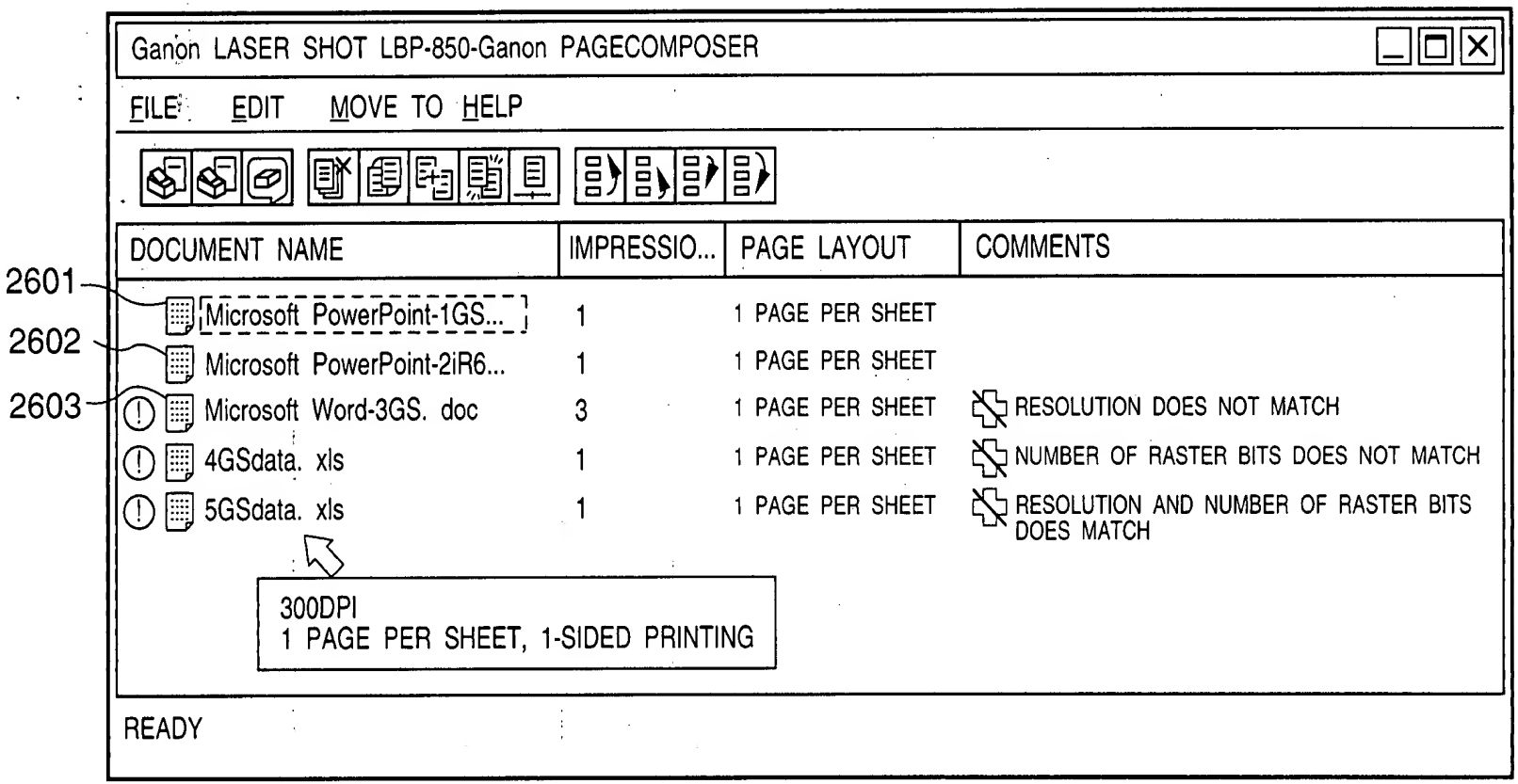

Ganon LASER SHOT LBP-850-Ganon PAGECOMPOSER
FILE EDIT MOVE TO HELP
DOCUMENT NAME
IMPRESSIO...
PAGE LAYOUT
COMMENTS
2601
Microsoft PowerPoint-1GS...
1
1 PAGE PER SHEET
2602
Microsoft PowerPoint-2iR6...
1
1 PAGE PER SHEET
2603
Microsoft Word-3GS. doc
3
1 PAGE PER SHEET
RESOLUTION DOES NOT MATCH
4GSdata. xls
1
1 PAGE PER SHEET
NUMBER OF RASTER BITS DOES NOT MATCH
5GSdata. xls
1
1 PAGE PER SHEET
RESOLUTION AND NUMBER OF RASTER BITS DOES MATCH
300DPI
1 PAGE PER SHEET, 1-SIDED PRINTING
READY

FIG. 27

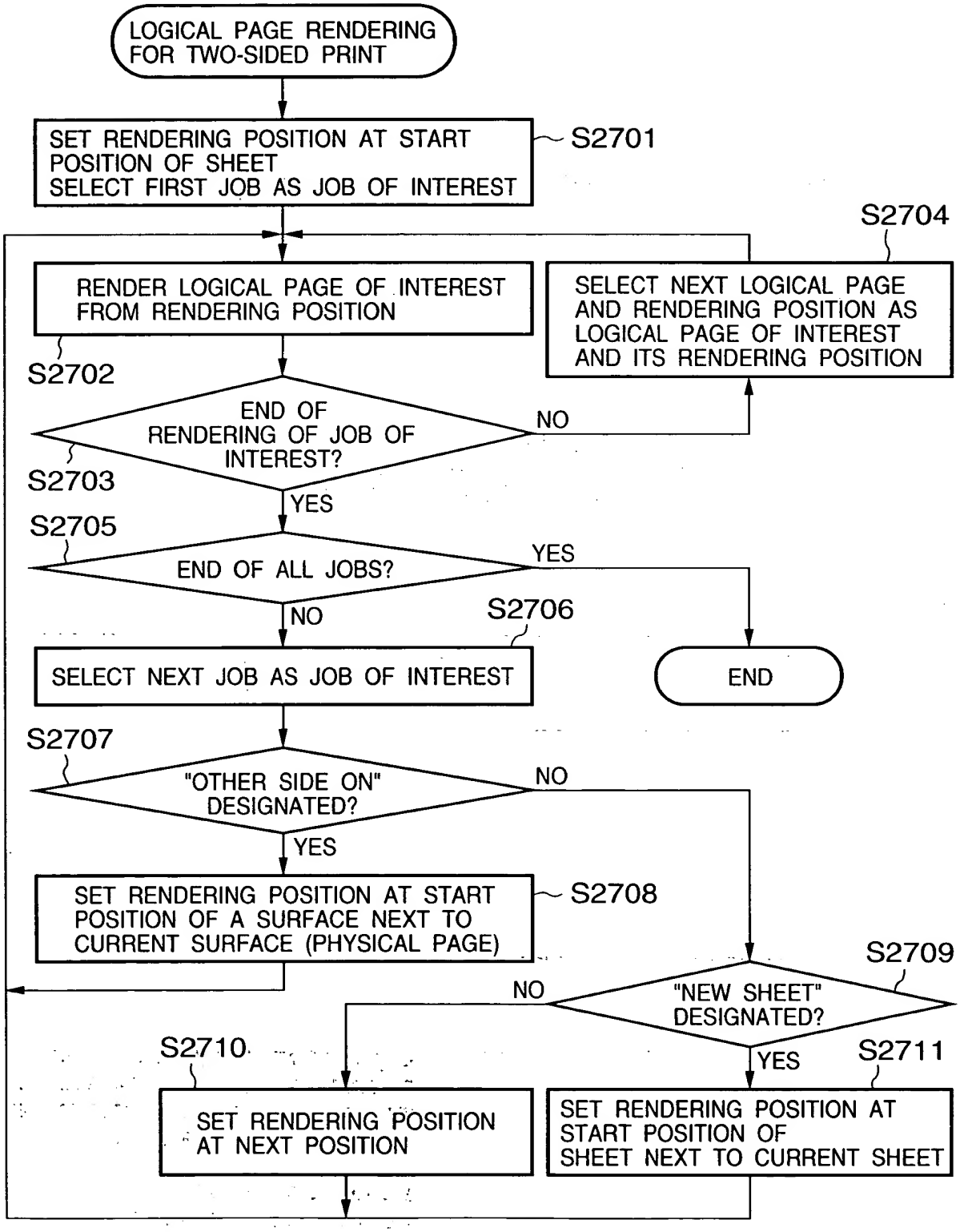

LOGICAL PAGE RENDERING FOR TWO-SIDED PRINT
SET RENDERING POSITION AT START POSITION OF SHEET
SELECT FIRST JOB AS JOB OF INTEREST
S2701
RENDER LOGICAL PAGE OF INTEREST FROM RENDERING POSITION
S2702
END OF RENDERING OF JOB OF INTEREST?
S2703
NO
YES
S2704
SELECT NEXT LOGICAL PAGE AND RENDERING POSITION AS LOGICAL PAGE OF INTEREST AND ITS RENDERING POSITION
S2705
END OF ALL JOBS?
YES
NO
S2706
SELECT NEXT JOB AS JOB OF INTEREST
END
S2707
"OTHER SIDE ON" DESIGNATED?
NO
YES
SET RENDERING POSITION AT START POSITION OF A SURFACE NEXT TO CURRENT SURFACE (PHYSICAL PAGE)
S2708
S2709
"NEW SHEET" DESIGNATED?
NO
YES
S2710
SET RENDERING POSITION AT NEXT POSITION
S2711
SET RENDERING POSITION AT START POSITION OF SHEET NEXT TO CURRENT SHEET

FIG. 28

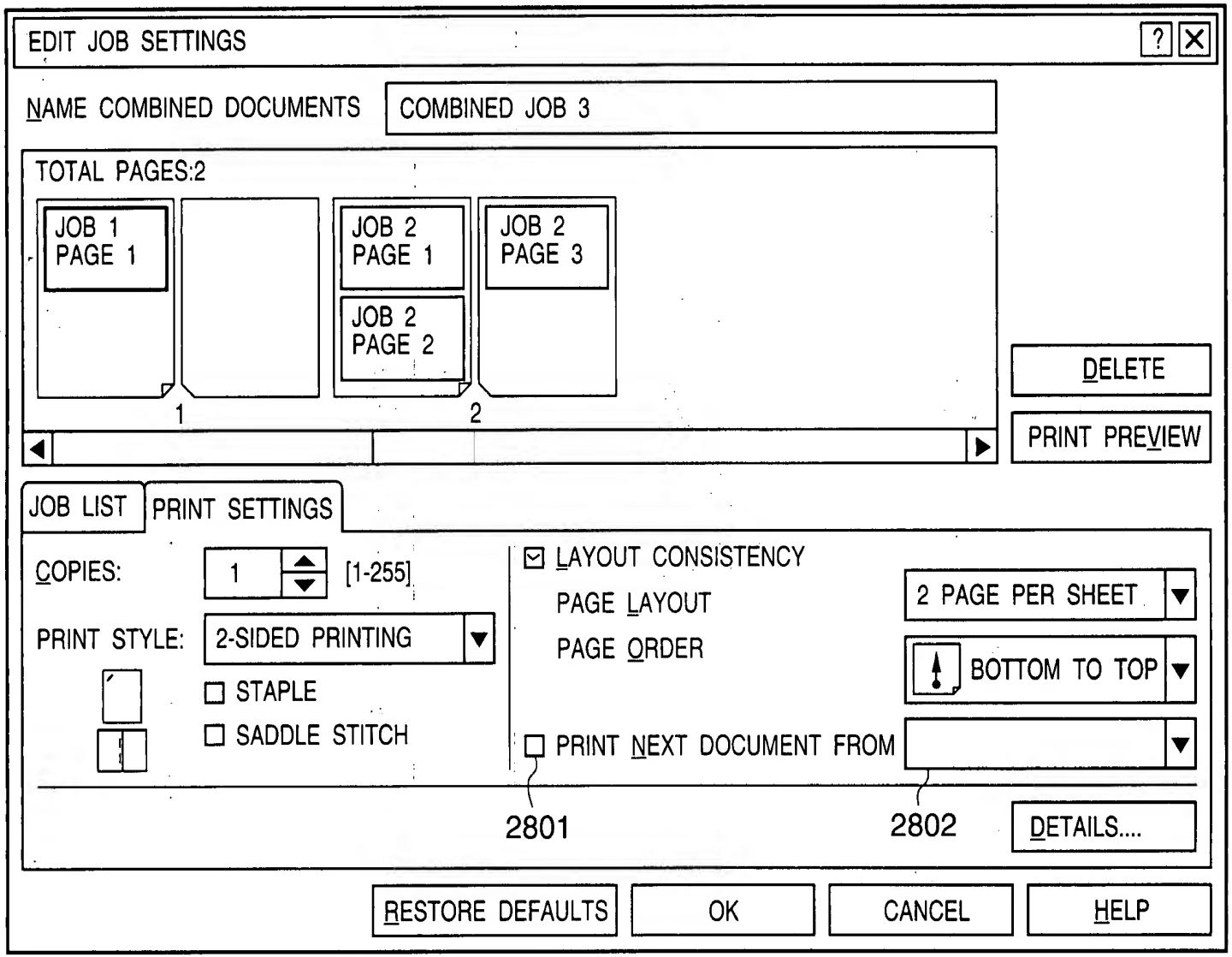

EDIT JOB SETTINGS
NAME COMBINED DOCUMENTS
COMBINED JOB 3
TOTAL PAGES:2
JOB 1 PAGE 1
JOB 2 PAGE 1
JOB 2 PAGE 2
JOB 2 PAGE 3
1
2
DELETE
PRINT PREVIEW
JOB LIST
PRINT SETTINGS
COPIES:
1
[1-255]
PRINT STYLE:
2-SIDED PRINTING
STAPLE
SADDLE STITCH
LAYOUT CONSISTENCY
PAGE LAYOUT
2 PAGE PER SHEET
PAGE ORDER
BOTTOM TO TOP
PRINT NEXT DOCUMENT FROM
2801
2802
DETAILS....
RESTORE DEFAULTS
OK
CANCEL
HELP

FIG. 29

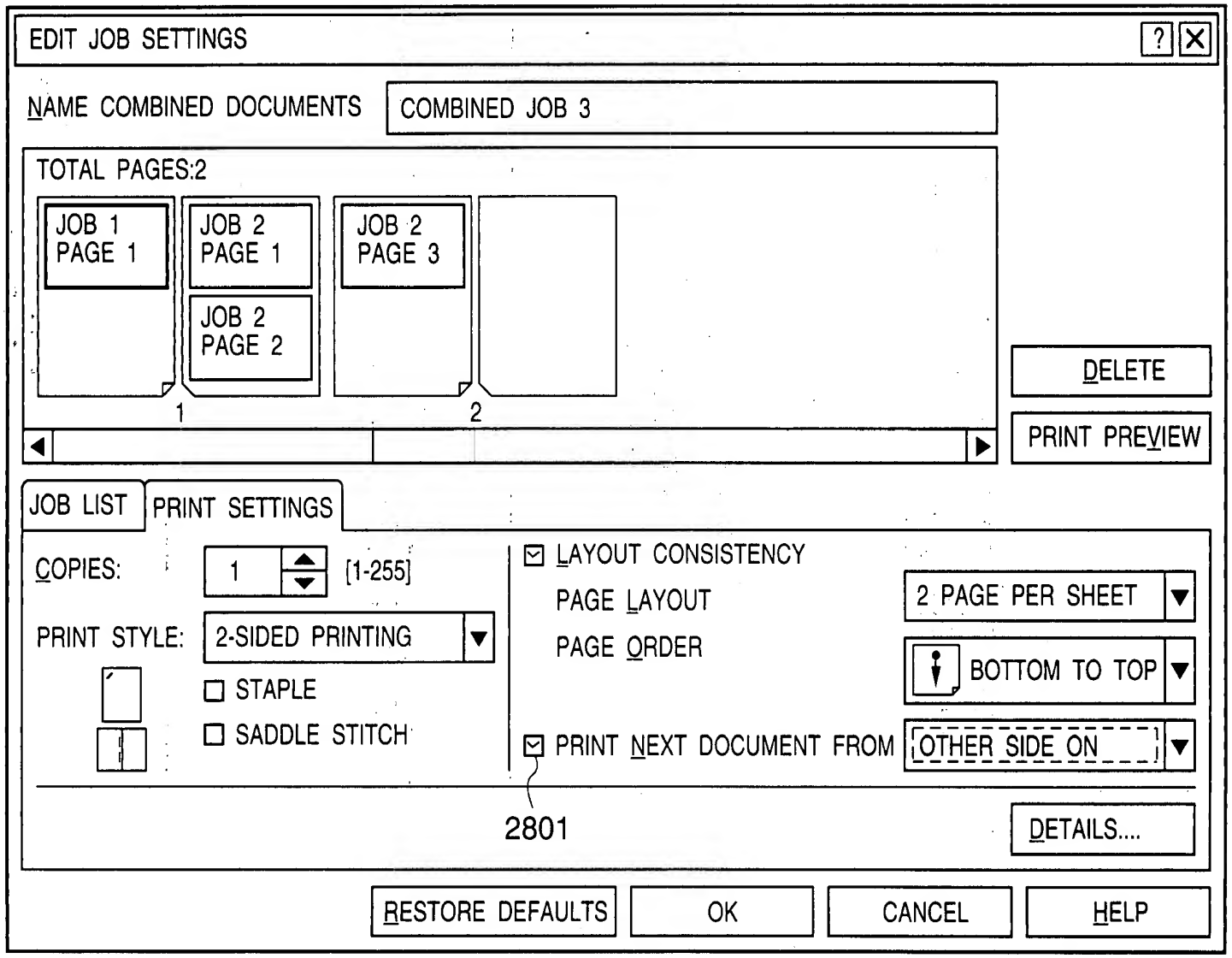
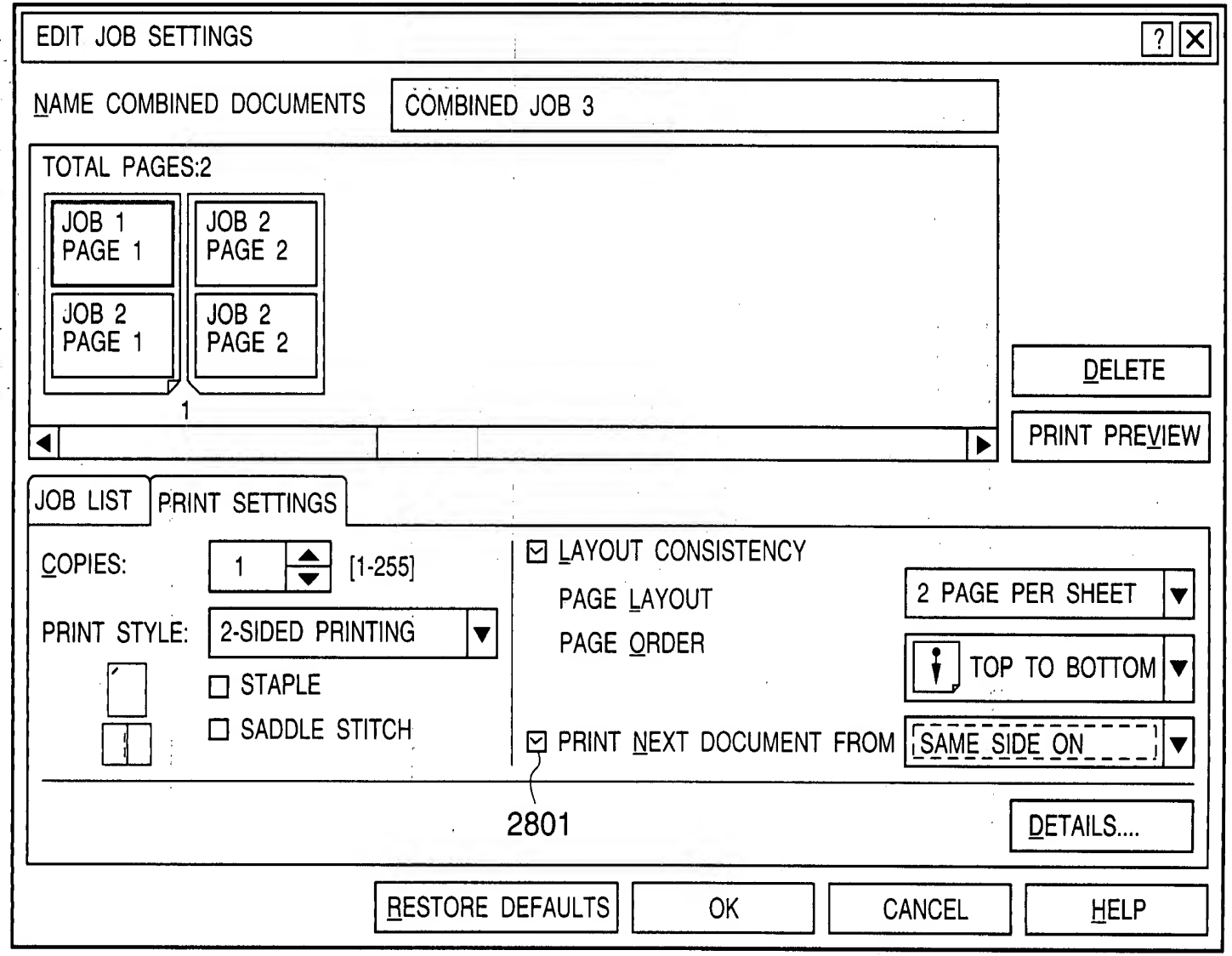

EDIT JOB SETTINGS
NAME COMBINED DOCUMENTS
COMBINED JOB 3
TOTAL PAGES:2
JOB 1 PAGE 1
JOB 2 PAGE 1
JOB 2 PAGE 2
JOB 2 PAGE 3
1
2
DELETE
PRINT PREVIEW
JOB LIST
PRINT SETTINGS
COPIES:
1
[1-255]
PRINT STYLE:
2-SIDED PRINTING
STAPLE
SADDLE STITCH
LAYOUT CONSISTENCY
PAGE LAYOUT
2 PAGE PER SHEET
PAGE ORDER
BOTTOM TO TOP
PRINT NEXT DOCUMENT FROM
OTHER SIDE ON
2801
DETAILS....
RESTORE DEFAULTS
OK
CANCEL
HELP

FIG. 30


EDIT JOB SETTINGS
NAME COMBINED DOCUMENTS
COMBINED JOB 3
TOTAL PAGES:2
JOB 1 PAGE 1
JOB 2 PAGE 2
JOB 2 PAGE 1
JOB 2 PAGE 2
1
DELETE
PRINT PREVIEW
JOB LIST
PRINT SETTINGS
COPIES:
1
[1-255]
PRINT STYLE:
2-SIDED PRINTING
STAPLE
SADDLE STITCH
LAYOUT CONSISTENCY
PAGE LAYOUT
2 PAGE PER SHEET
PAGE ORDER
TOP TO BOTTOM
PRINT NEXT DOCUMENT FROM
SAME SIDE ON
2801
DETAILS....
RESTORE DEFAULTS
OK
CANCEL
HELP